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R. CUNNINGHAM.

NARRATIVE

OF THE

Circumnavigation of the Globe

BY THE AUSTRIAN FRIGATE

NOVARA,

(COMMODORE B. VON WULLERSTORF-URBAIR,)

W. H. O. I.
WOODS HOLE. MASS.

Undertaken by Order of the Imperial Government,

IN THE YEARS 1857, 1858, & 1859,

UNDER THE IMMEDIATE AUSPICES OF HIS I. AND R. HIGHNESS

THE ARCHDUKE FERDINAND MAXIMILIAN,

COMMANDER-IN-CHIEF OF THE AUSTRIAN NAVY.

BY

DR. KARL SCHERZER,

MEMBER OF THE EXPEDITION, AUTHOR OF "TRAVELS IN CENTRAL AMERICA," ETC.

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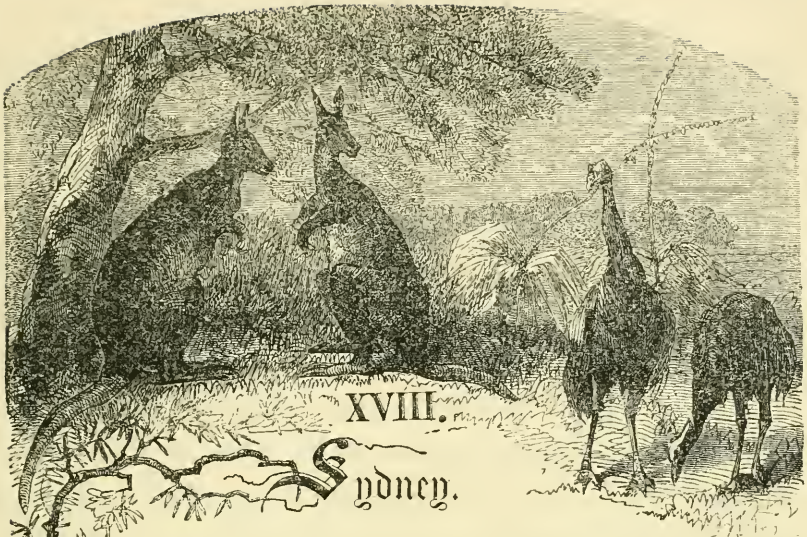

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Sydney.

Stay from 5th November to 7th December, 1858.

The politico-economical importance to England of her colonies.—Extraordinary growth of Sydney.—Public buildings.—Expeditions of discovery into the interior of Australia.—Scientific endeavours in Sydney.—Macleay's Seat at Elizabeth Bay.—Sir Daniel Cooper.—Rickety Dick.—Monument to La Pérouse at Botany Bay.—The Botanical Garden.—Journey by rail to Campbelton.—Camden Park.—German emigrants.—Wine cultivation in Australia.—Odd Fellows' Lodge at Campbelton.—Appin.—Wulongong.—Mr. Hill.—The aborigines.—Kangaroo hunting.—Coal mines in the Keira range.—An adventure in the woods.—Return to Sydney.—The Australian club.—Excursion up Hunter River as far as Ash Island.—"Nuggets."—The *Novara* in the dry dock at Cockatoo Island.—Reformation among the prisoners in the colony.—Serenade by the Germans in Sydney, in honour of the Expedition.—Ball on board the frigate.—Political life in Sydney.—Excursion for craniological purposes to Cook River Bay, and Long Bay.—Intercourse with natives.—Wool growing.—Attempts to introduce the Llama and Alpaca from Bolivia.—The gold-fields of the colony of New South Wales.—Is Australia the youngest or oldest part of the globe?—The convict-system and transportation as a punishment.—Departure from Sydney.—Barrier Island.—Arrival at Huraka Gulf, New Zealand.

Whoever wishes to form an accurate idea of the power and might of the British nation, and is desirous to discover the

sources of the all-important influence the "island race" exercise over the destinies of humanity, should visit, not England, but her colonies in America, Africa, Asia, and Australia. In these he will see in full and beneficial operation, that system which one of the greatest of German political economists, the ingenious Fredrick List, recommended more than thirty years ago to the German Government, when he spoke of the serious detriment the Northern country sustained year after year by the emigration *en masse* of skilled German labourers, and when he repeatedly urged to make agriculture under the tropics reciprocally beneficial to the manufacturing industry of the temperate zone.*

England has comprehended better than Germany how to utilize the energies of such of her children as emigrate to distant quarters of the globe, and to make them subservient to her own advancement as well; she evinced the most anxious solicitude for these pioneers of progress, extended her protection to them, flung the ægis of her own power over their adopted home, regarding each new settlement as but an extension of the limit of her empire, as an enlargement of the sources whence she drew the materials for her industrial handicrafts, as a new market for her manufactures! In all parts of the inhabited earth English activity has thus displayed itself, busily engaged in supplying the demand for raw materials in her home market, by exchanging for them her own manufactures, till English ships have become the all but

* A National System of Political Economy. Stuttgart, 1840. (J. C. Cotton.)

universal carriers of the commerce of the globe, while the English language has been adopted as the medium of intercommunication of all seafarers.

Australia, or New Holland,* as it was originally termed by its first discoverers, proud of their nationality, furnishes of all the British colonies the most conspicuous and instructive example of this policy. England has not merely thrown open this immense continent to European civilization, peopled it with hundreds of thousands of her sons, and created a new market for herself and all navigating nations,—she has also in this colony furnished the solution of a psychological problem, namely, that it is by no means an innate natural propensity to do evil, but rather the force of circumstances which drives man to vice and crime, and that the diviner portion of his nature forthwith re-asserts itself, so soon as he is provided with another more favourable sphere of action, and a fair opportunity is offered to him of earning his livelihood in an honourable, independent manner by the free, unshackled development of his mental and physical powers.

Originally founded as a penal settlement for convicts sentenced to transportation for long periods of years, and in fact composed at first of such unpromising elements, this splendid country is at present one of the wealthiest and most important colonies of the British Crown, and close to that spot where, on 28th January, 1788, 850 criminals were landed, there to take up their involuntary abode, there now rises in one of the nu-

* In an old map of the year 1542, the Australian continent is named New Java.

merous coves of the splendidly situate Bay of Port Jackson, a city of such magnificence, so large and so beautiful, that it has been called the "Queen of the South," or even, with more enthusiasm than accuracy, "Little London." The population of the city and environs is estimated at 93,000, that of this single colony at 350,000, while its trade has increased to such an extent that it keeps employed 1000 ships and 18,000 men, the value of exports of raw, and import of manufactured products, amounting for this one port to upwards of £12,000,000 per annum. The discovery of abundant gold-fields in the adjacent colony of Victoria has undoubtedly materially contributed to this enormous expansion, and has perceptibly increased the immigration, but the development of the capabilities of the land itself has not been less steadily increasing, wherever the population have pursued the surer and more solid occupation of agriculture and cattle-rearing. The wool growth of Australia, which in 1820 was barely 50 tons, has since then risen to nearly 25,000 tons, rivalling in bulk and quality that of the Cape, and rapidly becoming a dangerous competitor with those countries of Europe, whose wools have hitherto commanded their own terms in the English market.

A continent of such immeasurable natural resources, with a climate,* especially on its southern coasts, remarkable for its

* The mean of thermometrical readings on the north coast is 80°. 6 Fahr.;—at Port McQuarrie, in S.E. Australia (31° S.), 68° Fahr.; at Port Jackson (34° S.) 66°. 5 Fahr.; at Port Philip on the south coast (38° S.), 61°. 3 Fahr.; at Perth on the west coast (32° S.) 62°. 6 to 64°. 4 Fahr. The annual rain-fall in New South Wales is 45 inches.

mildness, equability, and salubrity, and a population so limited * in proportion to the extent of surface, was naturally an object of deep interest for the members of the *Novara* Expedition. Accordingly during their stay of thirty-two days they set diligently to work, not only to enlarge their acquaintance with the scientific idiosyncrasies of this vast portion of the globe, but also to examine minutely the prospects it holds out to German commerce and German emigration, and to investigate the influence which has been exercised on the development of the colony by the system of transporting convicts thither. And it is not less significant of the high repute enjoyed by the Imperial Expedition in foreign countries, as honourable to its members, to record, that the then Governor-General of New South Wales, Sir William Denison, who has since been transferred to the much more important and lucrative post of Governor of the Madras Presidency, and who enjoys no slight reputation in scientific circles as a conchyliologist, expressed his anxious desire that the geologist of the *Novara* should thoroughly examine the geological formation of the province of Auckland in New Zealand, and exerted himself vigorously to forward the accomplishment of this project.

* The total superficial area of the somewhat oval-shaped continent lying between 10° and 45° S. and 112° and 154° E., is about 2,100,000 geographical square miles in extent, the coast outline of which is about 7000 miles, so that for each mile of coast there are about 300 square miles of surface, or rather more than double the proportion in Europe. The united English population of the different colonies founded in Australia (exclusive of Tasmania or Van Diemen's Land) and New Zealand amounts to about 1,400,000 souls. Within twenty years the population has increased six-fold, and the value of the exports twenty-fold.

From the German residents in Sydney, as well as from all the officials and the inhabitants generally, we received the utmost assistance and most cordial co-operation in our various inquiries. The former received the Expedition with a most enthusiastic welcome, and it was truly gratifying to learn that some of the more keenly susceptible of home-influences had weeks before made the beach their favourite promenade, in order that they might be the first to see and welcome the long-expected German man-of-war at her arrival! The German newspaper "*Australische Zeitung*" (published by a native of Grätz, named Degotardi) of November 6th was quite filled with advertisements and notices relating to the *Novara*, and the festivities which had been prepared in her honour. Every member of the staff received a copy on board, so that before even we set foot on shore, we were apprized of the old German hospitality which awaited us on our arrival in this the fifth quarter of the globe. As, however, it was imperatively necessary to have the frigate taken to the Government dock, in order to repair the damages she sustained in the typhoon, the contemplated rejoicings had to stand over for the moment, till the *Novara* could come forth in renewed splendour, and was fit to give a proper reception to the homage intended to be offered in her honour. These rather extensive repairs would require three weeks to complete, and after the first few days had passed in making and receiving official visits, as also in sight-seeing in the city and environs, the greater portion of

their stay was employed by the scientific staff in excursions into the interior of the colony.

Sydney at present has with its suburbs attained already to the dimensions of a European city. Only thirty years ago there stood but a few herdsmen's huts, where now the visitor beholds block after block of handsome stone private residences, or magnificent shops. There is not one article of luxury or comfort which cannot be supplied here. The chief building stone of the locality, sandstone, is chiefly used in the erection of churches, public buildings, and private dwellings. The Exchange, the Bank, the Houses of Assembly, Government House, &c., are stately buildings erected in a solid, massive style, and if "Hyde Park," a treeless meadow in the centre of the city, by no means answers to its sounding title, the Botanic Garden, on the other hand, the park known as "Lady McQuarrie's Chair," 'Kissing-Point," and "Lovers' Walk," form promenades as delightful as any capital of Europe can show in such immediate proximity. Sydney, moreover, is amply supplied with gas and water, as well as with every means of conveyance that can facilitate intercourse in a large town, such as omnibuses, cabs, steamers, &c.

The theatres hitherto, whether as regards scenery or performance, have hardly exceeded mediocrity, but on the other hand educational establishments, public libraries, and hospitals, are of singular excellence. It is truly marvellous, and especially makes a profound impression upon the

denizens of old Europe, to observe what handsome, imposing, costly buildings have been run up among this comparatively youthful community. The Sydney University, founded in 1851, is built in the Gothic style, at an expense of £50,000, and is maintained by an annual grant of £5000. It is far the finest memorial erected by European civilization in honour of science, throughout the southern hemisphere. Its internal organization is somewhat analogous with that of those of the mother country. All the high schools of Sydney accord academic degrees in the various branches, and by a Royal Patent of 27th of February, 1858, holders of honours are raised to the same rank with those in the other universities of the Empire. Although only secular education is provided by the University, there have been founded four colleges in immediate proximity with each other, for the four principal religious denominations in the colony, Anglican, Roman Catholic, Presbyterian, and Methodist, in which the scholars may, without prejudice to the secular character* of the University proper, receive instruction in their various beliefs. The erection of these four adjuncts cost about £40,000 more. At the period of our visit there were only 38 scholars enrolled, whose instruction cost the state a rather round sum. A commencement had been made with a library, a museum of natural history, and a numismatic collection.

* The fundamental principle of the University is, "The association of students without respect of religious creed, in the cultivation of secular knowledge." (See Sydney University Calendar for 1858, p. 15.)

Besides the University, there are in Sydney a considerable number of very important educational establishments and public schools. The most strenuous exertions are made to keep the public schools in a high state of efficiency, and there is scarcely a hamlet, where the rising generation may not be instructed in reading, writing, arithmetic, grammar, and geography.*

An observatory is also in course of erection, but meteorological observations had long since been carried on in the principal places of the colony, and from the favourable natural conditions of the continent for conducting such investigations, the results must greatly contribute to our acquaintance with the laws regulating atmospherical phenomena.

One very deserving institution dedicated to the noble object of awakening a sense of the beautiful, and furthering the interests of science, is the Australian Museum. All that this glorious country presents of interesting and useful in the three great divisions of nature is here being gradually classified in scientific order, and displayed in elegant cases in spacious handsome apartments, the whole thrown open to the public for amusement and instruction, free of cost. Already an excellent start has been made with valuable collections of conchylia and birds, as well as numerous ethnographical specimens and fossil remains. The management of the Museum has been confided to the most distinguished

* The fixed salary of the teacher varies from £120 to £140 per annum.

scientific men of the colony,* and owing to the deep interest taken by these gentlemen in this truly national undertaking, the sphere of its activity is likely ere long to be extended to scientific publications, the appearance of which will be doubly valuable and important in a country which presents so many different objects for investigation and elucidation.

If, however, our knowledge of Australia and its black aboriginal tribes is as yet very scanty, it has not assuredly been due to any cold indifference on the part of the new settlers for the history of a country and a race of men who are rapidly disappearing from the face of the country. It is rather to be found in the physical conditions of the continent, and especially in the great scarcity of perennial springs. In fact, there is hardly any country, with the exception of Africa, the exploration of which has cost the lives of so many scientific travellers as this fifth quarter of the world. What manly devotion, ardour, and perseverance, characterize such names as Leichhardt, Oxley, Kennedy, Eyre, Mitchell, Cunningham, Strut, Babbage, Warburton, Stuart, Gregory, Selwyn, MacDonnell, &c.! And it may fill a German with honest pride, that one of his race has attained the pinnacle of scientific eminence here! The name

* At the period of our visit to the colony, the post of secretary was filled by Mr. G. French Angus, distinguished as an artist, and widely known for his valuable ethnological studies upon the Caffers, New Zealanders, and South Australian aborigines. Unfortunately his health gave way, owing to his exertions, and he now lives in retirement at Collingwood, in South Australia, where however he is still animated by the most intense zeal for science.

of Leichhardt is the most popular and most highly honoured of the learned names in Australia. Repeatedly we heard him spoken of as the Australian Humboldt. Rendered all the more eager by the success of his first enterprise, and stimulated by the splendid Governmental reward of £10,000 for his last discoveries, the indefatigable explorer started from Sydney in 1848, on a second journey, in which he intended to examine Western Australia, by crossing from Moreton Bay overland, to the West Coast and Port Essington. This proved to be the close of his earthly career. All trace of the lamented traveller has been lost, and even the admirably equipped expedition sent out by the Colonial Government, in March, 1858, under the experienced conduct of Mr. Gregory, on the track of Leichhardt, spent long months in fruitless wandering, and returned without any more positive information as to the destiny of the sorely missed naturalist, except the conjecture that Leichhardt and his companions had fallen a victim not to the murderous hand of the natives, but to the inhospitable nature of the region they were traversing. They seemed to have left the Victoria at its junction with the Alice (where it was thought a trace of the travellers was discovered in some incisions made in the bark of some trees),* and then attempted, favoured by

* The expedition discovered on the 21st April, 1858, in 24° 35′ S. and 146° 6′ W., an ash tree, two feet in diameter, on whose huge trunk the letter L had been deeply cut. Close by there were everywhere traces of a regular encampment, and an impression pretty universally prevailed that Leichhardt and his companions had camped here, and had cut this mark to indicate it. One of the oldest missionaries of

heavy storms and showers of rain, to get into the flat desert country on the north-west. As, however, the rain shortly afterwards ceased, the unfortunate travellers not merely ran short of water in prosecuting their dismal journey, but were prevented from returning, as the small quantity precipitated by a mere meteoric phenomenon would be exhausted in a few days, and it is not easy to suppose that such hardy, zealous, and experienced explorers would have failed to extricate themselves, had not their courage and physical powers been broken down and destroyed by privations of the most terrible nature.

Despite the tragic fate of Leichhardt's expedition and those of other explorers,* new expeditions are continually being

Western Australia, the venerable Mr. C. Threlkeld, objected, however, to this view that the letter L, of which so much was spoken, had in all probability been made by one of the youthful natives, who when learning to read and write are in the habit of cutting the letters on the trees. We present here the precise passage of the text of a letter of Dr. Threlkeld's to us :—" I send you a spelling-book, that Billy Blue, one of the black boys, used to have, when he was learning to read and write. He and others used to go into the bush, and cut the letters of the alphabet on the barks of the trees, and Brown, an aboriginal lad, who *went with the unfortunate Leichhardt*, used to do the same. *I suspect that he cut the celebrated L on the tree about which there is so much talk at the present time.*"

* One of the most appalling of these was that undertaken in April, 1848, by surveyor E. B. Kennedy, along the strip of land between Cape York and Rockingham Bay in Northern Australia, whose melancholy fate is described by one of the survivors, Mr. Carron, a botanist, in a not less simple than affecting manner. " When we first started everything went on well, and the most brilliant anticipations were indulged, although there were numerous obstacles to be overcome, and the few natives we encountered were invariably hostile. Gradually, however, provisions began to fail; sickness and loss of strength succeeded, while the prospect of reaching our goal grew less and less. The further north we got, as the hot season was now setting in, the more frequently did we find the forest rivulets dried up, so that we had for days to bear up against an almost maddening thirst. The horses which accompanied

set on foot for exploring the unknown regions of Australia in every direction, and although by far the larger part of the information collected consists rather of ghastly recitals of misery and privation endured than positive scientific results,* yet some of the more recent ones, especially those of Stuart

the expedition gradually sank from exhaustion." Almost every day Carron's journal mentions one or the other horse giving in of fatigue, when they were compelled for want of further provision to eat its flesh during the next two days. That of the last was conveyed along by the travellers in sacks, made from the skin of the animal itself. Whenever they encountered natives, these proved hostile, and assailed the little caravan with spears. Some of them indeed were more friendly, and traded with the travellers, but less out of sincere hospitality than with the hope of taking them in, and getting them unawares into their power. Thus, on one occasion a number of tall, well-made, powerful men and women made their appearance, and offered them some fish, which they themselves refused to eat owing to its putrified state. Hardly had the travellers approached it, unsuspicious of evil, when a cloud of spears cleft the air with a whistling noise, and the scene, hitherto so friendly and peaceable, became at once a scene of blood and confusion. However, the spear-men seemed to have no great dexterity ; they usually missed their mark, whereas the flints and double-barrels of the whites did deadly execution. One however proved more fatal than the rest, and killed Mr. Kennedy, the chief of the party. They were now only a few days distant from Cape York, the goal of their labours, whence a Government ship was to convey the leader and his party back to Sydney. But the survivors were also all but exhausted with the terrible fatigues of their journey. Only three out of the fourteen survived, and these were reduced almost to skeletons. Carron's elbow-bone of the right arm, and also the bone of the right hip, were through the skin! (Narrative of an Expedition undertaken under the direction of the late Mr. Assistant Surveyor, E. B. Kennedy, for the Exploration of the Country lying between Rockingham Bay and Cape York ; by W. Carron, one of the survivors of the Expedition. Sydney, 1849.)

Still more lamentable was the fate of the last and most important of these expeditions, which in 1861 succeeded in crossing the Australian continent from the north frontier of South Australia to Carpentaria, and back to Cooper's Creek, in which, unfortunately, the travellers missed the dépôt troop that had been sent to their assistance, and the entire party, including Messrs. Burke, Wills, and Gray, lost their lives, only one of their number, King, escaping to tell their sad fate. (Vide Appendix.)

* Government has bethought itself of a plan for facilitating discoveries in the interior, and rendering them more profitable by importing from Egypt into Australia camels and dromedaries, chiefly of the breed known as El Hura, as these animals can

and Burke, have made also important discoveries in the interior; and in view of the impulse which the lamentable state of American politics threatens to impart to cotton-growing everywhere, the highly fertile banks of the Murray, which with a very little labour might be made navigable far into the interior, may at no distant period be covered with numerous cotton plantations.

While the younger and more adventurous spirits enter with all their heart and soul upon these dangerous experiences of rude hardship, there is in the capital of the colony a not less marked scientific vitality, and the valuable libraries and private collections of the Governor-general, Sir Wm. Denison, Mr. W. Macleay, the botanist, Dr. George Bennett, physician and geologist,* Dr. Roberts, microscopist, Messrs. W. B. Clarke and Selwyn, geologists, as well as their various and valuable contributions to science, exercise a doubly important and beneficial influence upon a number of contiguous states so peculiarly organized as those of Australia, which, first penal settlements, and then gold-fields, seemed to have been deprived of all those favourable conditions, which elsewhere are usually supposed to be requisite for the development of intellectual and scientific activity.

easily get over 60 to 80 miles per diem, and can moreover dispense with water for weeks together.

* During a visit which our naturalists paid to Dr. Bennett they were shown a young pair of the Morok (*Casuarius Bennetti*), discovered not long since at New Britain, which he intended to present to the Zoological Society of London for exhibition at the Regent's Park. What is very remarkable in this singular bird is the shape of the bill, which is curved in the male, but almost straight in the female.

Much has also been done already in Australia for the diffusion of the principles of social economy and the diffusion of political and linguistic knowledge; and the historical writings of Dr. J. D. Lang,* and the philological works of Dr. Threlkeld, both men of high attainments and of similar zeal in promoting the welfare of their fellow-men, furnished us with profound information as to the political history of the country, as well as the original language of the aborigines.

Since the appearance of the first ethnographic works of Count Strzelecki there has appeared little that is new respecting the origin, migration, and history of the black races of Australia, and what we have to say on this momentous topic, whether in the result of personal intercourse or of information derived from other sources, we shall reserve for the narrative of our excursion into the interior of the colony, and our foregathering with the primitive inhabitants of the back settlements.†

* This distinguished gentleman, conspicuous alike as a theologian and a politician, who plays a by no means insignificant part in the legislative assemblies of the colonies, presented an address to the Parliament of Frankfort in 1848, in which he set forth the advantage of founding a German colony in the Pacific. Owing to the ignorance prevalent on the subject this *brochure* passed unnoticed, and New Caledonia, the island which the worthy Doctor had designed for a German colony, was taken possession of by the French. He has since published a most interesting and valuable work on Queensland, in which he gives some very curious details about the native practice of skinning their dead, when the true skin being of a white colour, the corpse has a most ghastly appearance. He says this is the reason some of the tribes so highly reverence the *white* man, whom they regard as their own ancestors restored to life, but in an improved nature ! !

† The depopulation of the natives is advancing so rapidly that one of our Sydney

Among the excursions in the immediate neighbourhood of Sydney we at once selected a visit to the well-known naturalist Mr. Macleay, who resides at a beautiful estate near Elizabeth Bay. In his beautiful garden one sees the most interesting plants of Australia side by side with splendid specimens from all other parts of the world. A stroll through the extensive grounds derives a double interest when in company with its highly-cultivated proprietor, and we are the more grateful for this good fortune, as the venerable old gentleman lives in strict seclusion.

Another very interesting visit was that paid to Sir Daniel Cooper at his residence on Rose Bay (*Wullurah*).* Sir Daniel is of humble parentage, but fell heir to property which made him the wealthiest man in the colony, and which he now dispenses with the most noble and hospitable profusion. During the Crimean war he subscribed £1000 per annum towards defraying the costs. Lately he has been elected speaker of the Legislative Assembly, when he was knighted by her Majesty. His villa in Rose Bay, when completed, promised to be surpassed by few mansions of the English nobility in elegance and comfort.

friends writes, "An expedition similar to your own, which shall visit us some years hence, will find little more than a scant remnant of the aborigines. That of the *Novara* is probably the last of a scientific nature, which will have been successful in seeing living specimens of the once numerous blacks of Australia."

* *Wullurah* in the native language signifies "the place of deliberation," because in former times this place had, on account of its commanding position, been selected by the aborigines for assembling the various tribes by means of watch-fires, or blasts of a horn, to decide upon peace or war.

Close to the palatial residence of the wealthiest resident of Australia, and clad in a filthy woollen coat, with an old hat on his head, crouches Rickety Dick, a wretched crippled native, the sole survivor of his tribe, once the lord of all this country, who now stretches out his horny hand to receive charity. Rickety Dick, who can only talk Australian, lives under a bark thatch, and leads a mendicant life, and this not owing to downright destitution, but because such a lazy mode of existence suits him better than a residence within the walls of a Poor's House. He finds himself more comfortable here, and cannot bear to quit the soil on which he has passed the greater portion of his miserable existence. Sir Daniel lets this last scion of a decayed race want for nothing, and gratifies every wish that the poor half idiot can form.

One excursion which no stranger omits to make is a ride to the monument erected to La Pérouse at Botany Bay, a pretty good road to which passes through beautiful woods full of magnificent oaks, as also of *Eucalyptus*, or gum tree, so characteristic of Australia, *Casuarina*, or cabbage tree, *Xanthorrhea*, *Acacias*, and various descriptions of *Epacris*. The monument itself stands on an open cleared space, in what is known as "Frenchmen's Gardens" (because, according to tradition, the soldiers had raised a few vegetables here), and is a plain sandstone obelisk about 30 feet high, standing on a pedestal and crowned with an iron globe, within an enclosure about 35 feet square, bounded by a parapet wall of from three to five feet high.

The inscription, which is in French, and on the south side facing the sea, runs as follows :

A la Mémoire de M. de La Pérouse. Cette terre, qu'il visita en 1778, est la dernière d'où il a fait parvenir de ses nouvelles. Erigé au nom de la France, par les soins de M. M. de Bougainville et Ducampier commandant la Fregatte "La Thétis" et la corvette "Espérance" en relâche au port Jackson en 1825.

On the north side is an English translation of the above, and on the west a French translation of the English inscription on the east side. "Foundation laid 1825. Completed 1828."

Close by this simple monument, more interesting owing to the subsequent fate of the renowned French navigator than by its merits as a work of art, is Botany Tower, a sort of look-out for the whole coast line. This octangular tower stands quite by itself, and commands a magnificent and extensive view over Botany Bay. To the N.W. one perceives a flag-staff of Banks's establishment, a pleasure resort of the Sydneyites, which, on account of its small zoological garden, is likewise of some scientific interest. S.E., on the opposite side of Mud Bay, is visible the point of land where Captain Cook, accompanied by Banks and Solander, first trod the soil of Australia. Among the sandstone rocks adjoining, a brass tablet, with a suitable inscription, commemorates this interesting fact.

The botanical garden attracted very much of the attention of the scientific staff. It possesses, next to that of Buitenzorg (see vol. ii. p. 204), the largest and most valuable collection we saw throughout our voyage. In addition to its splendid speci-

mens of *coniferæ* and the incomparable Dammara pine-tree; it also enjoys well-merited celebrity for its successful rivalry with that of Java in rare specimens of palms. The climate of Sydney is admirably adapted for experimenting on the cultivation of plants from the most various parts of the world; and while in one part of this garden we find the plants of every clime, which flourish here in great luxuriance, another portion is dedicated exclusively to the cultivation of Australian trees and canes. At the entrance stands a magnificent *Araucaria excelsa*, like a sentinel on guard over this singular vegetable world. A gigantic *Grevillea robusta* attracts the eye by the striking tint of its luxuriant orange-yellow blossoms, shining with indescribable charm through the dark green of the foliage. *Banksias*, *Casuarinas*, different species of *Callitris*, *Xanthorrhea*, *Proteaceæ*, *Eucalypti*, the beautiful *Telopea speciosissima*, the giant lily (*Doryanthes excelsa*), and many others indigenous to the Australian continent, such as never meet the European's gaze, or, at all events, only very rarely in forcing houses, here arrest the attention by their towering forms, their elegant foliage, and their grand proportions, as compared with their brethren of northern climes. One species of weeping willow (*Salex Babylonica*), which grows here in the utmost luxuriance, has a special historic interest, as it was a shoot from the well-known willow that overshadowed the grave of Bonaparte at St. Helena. Through the obliging attention of the superintendent of the garden, Mr. Charles Moore, who spared neither trouble nor pains to afford us all the assistance in his power, our col-

lection of Australian flora is exceedingly plentiful and valuable. It consists not merely of a comprehensive collection of Australian seeds and useful woods, but also of some species of living plants, forwarded to Europe in what is known as Ward's chest. At the same time we were successful in procuring and sending, in accordance with his request, to Professor Rochleder, in Prague, a Fellow of the Imperial Academy of Science, some 50 or 60 lbs. of the raw *Epacris Grandiflora*, as also a small quantity of *Casuarina equisetifolia*, for the purpose of chemical experiments, especially with regard to the relations of chemistry with the geographical distribution of plants.

At last, on 16th November, we were able to make out our long-projected excursion to Campbelton, 33 miles distant, over a tolerably good, usually somewhat flat, country, traversed by railroad in about two hours.

On our arrival at this small but most industrious village we found, awaiting our arrival, our hospitable friend, Sir W. Macarthur, who took us to his estate adjoining, called Camden Park. Sir William belongs to one of the most distinguished families in the colony, and enjoys the double reputation of being at once the most important wine-grower of Australia, and of having the best wine in his cellar.

We drove to our host's house through very pretty scenery, and thus had a fresh opportunity of satisfying ourselves of the strange inaccuracy of former travellers, who related that the leaves in Australia were of wood and the stems of iron, that the bees had no stings, the birds no wings, and hair

instead of feathers, the flowers no fragrance, the birds no melody, and the trees, like so many Peter Schlemils, no shadow. Although Nature has been guilty of some few freaks both in Australia and in New Zealand, and has created some extraordinary animals, such, for example, as the duck-billed platypus (*ornithorrhynchus paradoxus*), the ant-eater, the kiwi, &c., these are but exceptions, and there are here but few differences to be remarked in either the animal or vegetable world, such as should distinguish it for extravagance beyond all other countries. In Australia there are birds that sing, and odoriferous trees and flowers in great profusion, and the forests, at those places whither the axe of the busy settler has not yet penetrated or imparted to it a park-like aspect, are as dense, as thickly clothed with underwood, and as difficult to make one's way through, as in any other quarter of the globe under a similar latitude.

Close beside the elegant residence of Sir William are extensive vineyards, to superintend which he imported German vine-dressers from the Rheingau. Each of these families has his own hut, a plot of garden ground, and in addition to rations of milk, bread, and butter, receives £25 per annum wages. When these good folks heard that strangers, compatriots of theirs, were among them, with whom they could converse in their mother-tongue, a dozen or so at once assembled to bid us welcome. Most of these betrayed a certain amount of hesitation in expressing themselves in their own language, and, like the same class in Pennsylvania, whenever

they were at a loss for a word supplied it by its English equivalent. There resulted from this a most comical jargon, sometimes most grotesque in its eccentricity, as, for instance, when, on our remarking to one of these vine-dressers who had been in Australia for ten years that he seemed to have quite forgotten his German, he replied, with an air of outraged national dignity, "Oh no! *wir* keep it *immer* in exercise."

The entire number of Germans in New South Wales is estimated (in 1858) at 7000. They are usually settled on the larger rivers, such as Hunter, Clarence, Brisbane rivers, where they have small farms on the alluvial soil, or are engaged in agriculture, or vine cultivation. Their industry, perseverance, and frugality soon make them independent and well-to-do. We were told of one poor peasant of the Rhenish districts, named Frauenfelder, who arrived here from Germany, in 1849, with twelve daughters, and settled on Clarence river as a vine-dresser. After ten years of unwearied activity he became a prosperous man, got all his daughters well married, and now owns one of the most flourishing settlements in the entire colony.* A German enjoys in Australia, after five years' residence, the same political rights as the English. After twelve months he becomes naturalized and may possess land; after three years he may vote; and after five years' residence he may become a member of Parliament. Should there be

* On the Clarence river there has been for several years past, in full activity, a stearine candle-factory, which pays well, owing to the demand at the "diggings" for these candles. In 1856 the value of those manufactured was £600,000.

anything specially affecting German interests in the colony, they can at least influence one vote in Parliament. The reason why the number of Germans in Australia is yet so small is undoubtedly owing to the high price of land. The same quantity which can be purchased in the United States for one dollar costs £1 here, and this solely because the Colonial Government contracted a loan in former days with the wealthier colonists, for which they pledged the land, which was taken at £1 per acre; this has never been paid off, so that the mortgagee is virtually the proprietor of the soil, without Government being in a position to profit by its contract or get rid of its liabilities. It thus has become necessary for them to enhance the value of the land, and this seems to be the chief difficulty in the way of lowering the acreage price, to the manifest encouragement of emigration and the cultivation of the soil.

Sir William conducted us, now on horseback, now on foot, now in his carriage, over his extensive domain, and did not fail to acquaint us with the details of everything that could be interesting or useful. Wine cultivation in Australia, though only first raised into importance in 1838, has made such rapid strides, and has proved so profitable, that in no long time England, hitherto so deficient in wines, will be enabled through her colonies to vie with the choicest vintages of Europe; for those of Australia and the Cape are little inferior even now in body and *bouquet* to those of Spain, and it is only the smallness of the quantity hitherto manufactured, and almost entirely re-

served for private consumption, that has stood in the way of their being much more extensively dealt in in European markets. The entire product of wine in 1858 was 60,000 gallons, but the reason why the quantity is so limited is not in the unsuitability of the land devoted to it, but the great difficulty of procuring labour, and of getting it at the precise moment when it is most wanted. As often as the journals launch forth upon the discovery of some fresh gold-field, the field hands forthwith strike work, and make off to the "diggings." On such occasions many thousand men are suddenly smitten with the gold fever, and their ordinary avocations are at once abandoned. We saw on one occasion a number of half-finished houses, which had been left in that incomplete state by the thirst for gold of the labourers, who are omnipotent here. "There are no greater tyrants than the labourers of this country," was Sir William's pithy remark, as he looked sadly on their work, abandoned unfinished, and the half-cultivated fields around.

Our host made us taste various descriptions of wine, which in every respect greatly resembled sherry, while a redder sort strongly reminded us of Muscat. Even in Australia, the grape has already been attacked by that mysterious disease which has done such mischief in various parts of Europe, and especially in Madeira, but its noxious effects have as yet been confined to a few species only. Much damage is occasionally done by a species of worm, for the extirpation of which boys are engaged at from 1*s*. to 2*s*. per diem. The

vintage in Australia usually begins in March and lasts till far on in April.

We passed a short hour very agreeably in Sir William's study, which comprises a library full of valuable particulars as to the history of the country. At every moment the traveller from long-settled countries, feels an emotion of surprise at the numerous and costly collections of rare works and valuable cabinets of natural history he finds in a country where he might expect that the universal rush after earthly dross must render such pursuits valueless. The fact is, that in forming an estimate of the country he is almost certain to omit taking into account that, in addition to the convicts and gold-diggers, there have come out hither a considerable number of young men of the highest circles of English society, who, provided by Government with tracts of land for settling upon, are in hopes of more speedily attaining fortune and position than in England, where the younger sons of the aristocracy are in too many instances apt to lead a sauntering life of dependency. Such cadets of leading families have, since the commencement of the present century, settled in considerable numbers in various parts of Australia, and have introduced with them that taste for combined elegance and comfort, which the foreign traveller in that country has such reason to feel surprise at, as well as to be thankful for.

After our visit to Camden Park we spent the rest of the day at Campbelton, making preparations to continue our

excursion as far as Appin and Wulongong, in the district of Illawara. From Campbelton to Appin is a distance of 12 miles, by a tolerably wide level road, partly through cultivated farms, partly through forest scenery. We encountered but one vehicle the whole distance, containing a family dressed in their best, to accompany a body to the grave—probably some father or sister. "A funeral in the bush," said our driver to us with a somewhat serious face, as he called our attention to the cart moving on slowly through the stillness of the wood. In a simple little forest hut, whose inhabitants are engaged in avocations that necessarily imply the closest daily intimacy, the stroke of death must fall with redoubled severity, as he strikes down some of the dearest and best beloved.

When we reached Appin the day was already too far spent to admit of our reaching Wulongong, the end of our journey, the same evening. Uninviting as was the filth of the little village ale-house where we alighted, we had to make the best of its accommodations, as it was the only inn in the place. The dialect which now saluted our ears unmistakeably proved that we were domiciled in an Irish house. The people were by no means poor, they possessed an extensive "run" near the hotel, but it is part of the character of Irish settlers to be superior to the virtues of cleanliness and order. Quite close at hand began the forest, a visit to which was rewarded by the capture of several species of birds peculiar to New South Wales, among others

the laughing jack-ass (*Dacelo gigantea*) and the beautiful blue-black atlas bird (*Kitta holosericea*).

The following morning we resumed our journey through lofty, dense, and magnificent forests, in which the vast trunks of gum-trees imparted their special character to the scenery. One of the most beautiful points of view in this delightful drive was when we crossed Sir Thomas Mitchell's, or Broughton's, Pass, which has been cut through the gigantic rocks of a mountain-range at considerable expense and labour, presenting at every turn a fresh and more beautiful grouping of rock and mountain fringed with fir and gum, reminding us somewhat of the romantic savage solitudes of the Alps.

On our way to the coast we passed but one solitary farm, consisting of a couple of wretched wooden huts, thatched with bark, standing on a clearing named Bargo, where the mail-boy on his way from Appin changes horses, and remains for a few hours over-night. We merely took some coffee, and were not a little surprised at finding it presented to us in a fashion in strong contrast with the rude exterior of this forest hut. Sheffield and Wedgwood wares in the bush, and English ships constructed of Australian timber—such is the secret of English political economy!

Not far from Bargo we enter upon troublesome sand wastes, at one point of which the traveller enjoys a wonderfully extensive prospect over the Illawara lake, the Keira range, and the sea, especially if, as was our case, he is accompanied by intelligent *ciceroni* acquainted with the

country, otherwise he is likely to pass this little elevation, only a few paces from the road, little dreaming of the magnificent landscape which he is missing.

As soon as we got to the coast we once more encountered fan-palms, tree-ferns, and other representatives of tropical vegetation, the last few hours of our road towards the little port lying through scenes of Eden-like loveliness. About 3 P.M. of the 18th November we reached Wulongong.

We again fell in here with Sir William Macarthur, who had undertaken a very arduous ride through the forests around Wulongong for the purpose of collecting some tree-ferns, which he intended sending to England. Few nations have such a thorough appreciation of nature as the English, or exert themselves so unselfishly, by personal observation and indefatigable energy, to enlarge the acquaintance of mankind with natural history in all its different ramifications. Men in every grade of life take a pleasure in hunting out rare species of plants, animals, or minerals, in the remotest districts of the globe, which they transmit to their own country, or publish such observations respecting them as may make them available for science, handicraft-industry, or commerce. By these incidental voluntary contributions to the general stock, England now possesses scientific collections such as hardly any nation can hope to keep up short of an enormous expense. These endeavours, it is true, are considerably favoured and supported by the fact of British colonies being scattered over the entire earth, but

even in this respect it must be conceded that it is through her own meritorious, unselfish policy that circumstances thus combine to aid her efforts in this peculiar direction.

Wulongong is a hamlet consisting of a few streets, and its principal resources seem to be in the visits of the Sydneyites, who come hither for sea-bathing. Already the existence of several hotels, which, considering the size of the place, are unusually elegant and extensive, but at the same time extremely costly, shows that Wulongong must be rather extensively patronized by the inhabitants of the capital, with which it has regular communication by small steamers, making the voyage in a few hours. Unfortunately Wulongong has no convenient harbour, but only a small exposed roadstead, rendered barely safe for a few small vessels by a stone bulwark, so that in the event of rough weather the landing and embarkation of visitors is attended with much discomfort.

We alighted at the Brighton Hotel, prettily situated on the sea-coast, and met here our newly-acquired Australian friend, Mr. Edward Hill, a son-in-law of Sir D. Cooper's, who, with his usual kindness and forethought, had made all possible preparations for ensuring that our further flying visit to the Illawara district should be one of the most memorable episodes of our stay in the colony. Mr. Hill, an Australian by birth, may, through the peculiar circumstances of his life, his striking observations on and profound sympathy with the blacks, be considered one of those most

profoundly acquainted with that remarkable race, whose idiom, as spoken in this district, he can converse in with the utmost fluency. For this gentleman's attention we were indebted not merely for repeated opportunities of intercourse with the natives, but also for the excitement, to us thoroughly novel, of a kangaroo-hunt.

A number of natives were living in an improvised sort of settlement outside the town, and camped around the forest under low sheds of bark. At a little distance off Mr. Hill uttered a sharp, shrill whistle, which was immediately responded to from the forest. Presently two young natives made their appearance, and shook hands with Mr. Hill. An old man with grey hair remained cowering upon the ground without stirring. There were altogether four men, two women, and two children, all pretty well made, their skin of a black or dull brown hue, broad nostrils, and black crisp hair, which, however, had nothing woolly in its texture. One of the women carried a child, whose features and complexion were obviously the result of white parentage on one side. However, she did not seem, as is the case with other races that are proud of their colour, to be looked down upon on that account by her own race, who, so low is their standard of morality, rather consider it an honour for a black woman to bear a child to a white. Men and women alike showed on their skins the protuberant cicatrices of artificial incisions, two or three inches long, chiefly on the breast, arms, and back.

All the male natives with whom we conversed had had the upper central teeth knocked out, such being one distinguishing mark of their having attained the dignity of manhood!

The abundance of mustachio and beard of the Australian savages is a marked peculiarity, which none of their cognate races east or west have in common with them. We were also told that they value the beard as their highest ornament, and make it one of the great objects of their life to tend it. No man of their race dare marry or kill an emu till he can show a beard, to which also great virtue is attached in battle. None of these natives understand the use of the Boomerang.*

The natives around Port Jackson and in the Illawara district have, generally speaking, little of the aboriginal about them, and their abject misery and addiction to drink make them pitiable and disgusting objects; for their present hopeless state is in great measure attributable to their contact with civilization, which has made them neither intelligent nor industrious. The natives, however, of the banks of the Murray, Clarence, and Brisbane rivers, though of the same race, are of a very different appearance. They keep up the habits of their ancestors, and seldom come in contact with

* According to English writers this instrument, the peculiar properties of which are so well known that we need not enlarge upon them here, has also been found in the Sarcophagi of Upper Egypt. In some of the frescos now in the British Museum, which illustrate the manners and habits of the Ancient Egyptians, a figure is represented in the act of launching the Boomerang against a covey of ducks, which are flying out of a thicket.

civilization, and even then only with its pioneers, the squatters and shepherds. Among these the customs of circumcision and unlimited polygamy are universal, each man having as many wives as he can steal or support. Owing, however, to their nomad life, this system is practised to but a limited extent. Infanticide, especially of female children, is of very frequent occurrence. Abortion is also so frequently practised that they have a word (*Mibra*) to express it! On the other hand, we read in Count Strzelecki's valuable work that "the female natives after illicit commerce with a white man become barren for their own race," which, according to all unbiassed observers, is a complete delusion.

In no part of Australia do the natives cultivate the soil. Nomad as is their mode of life, they live almost exclusively on the products of the chase, or of the deep, according as they live in the interior or on the coast. Lizards, snakes, and insects, and some few roots and resinous substances, form the delicacies of their primitive cookery.

Their dwellings are either natural cavities in the rock, or a few pieces of bark fixed into the ground at either end, and arched upwards in the middle. Throughout New South Wales the custom prevails, when a native dies young, of burying him under a shallow mound of earth, only the elders possessing the privilege of being consumed with fire. In the latter case the corpse of the deceased, with his hunting and fishing implements, is placed on a pile of dry wood about three feet high, with his face towards the rising sun. This is

covered by the surviving relatives with straw and wood, who then set fire to the funeral pyre. Some days later the ashes and calcined bones are collected and burnt. The name of the dead is never again pronounced, any individual of the same tribe, who may also happen to bear it, being compelled to exchange it for another.

The prevalence of cannibalism is a well-established fact among the natives of the north. M. Augos, amongst other interesting particulars, mentioned one case, where a boy died in the vicinity of Moreton Bay, whose head and skin, according to the savage habits of the natives, were separated from the rest of his body and dried over a fire. The father and mother were both present and uttered loud cries. The heart, liver, and entrails were divided among the warriors, who carried away with them pieces stuck on their bone-pointed spears; while the upper part of the thigh (apparently the tit-bit) was roasted and eaten by the parents themselves! The skin, the skull, and the bones were, on the other hand, carefully packed up and taken away with them in their grass sacks. It is not unusual for a mother to devour her own child, that she may thereby regain the strength which the fruit of her womb has abstracted from her! When a warrior of a hostile tribe falls into their hands they celebrate his sacrifice with savage glee, by rubbing their bodies with the fat around their victim's kidneys, by which means they believe they strengthen their muscles and inspire their hearts with courage. In the southern parts

of Australia the natives use human skulls as drinking cups, and one instance is on record where a portion of a human skeleton was habitually used by an entire race as a tool. Each woman has one of these bone calabashes, which she usually has hollowed out and manufactured herself. In the tolerably comprehensive ethnographic collection of the Australian Museum we saw several examples of these hideous drinking vessels! With respect to the idea of a future life, or the immortality of the soul, the natives seem to have very contracted notions, principally confined to a superstitious dread of evil spirits, and to the very singular notion that after death they are converted into whites, and that the Englishmen who now people their hunting grounds are the spirits of their ancestors thus transformed!

At various parts of the colony, especially among the outlying mountains and bare rocks adjoining Middle Harbour, Camp Cove, Point Piper, Mossman's Cove, Lang's Cove, &c., the eye is attracted by numbers of rude sculptures hewn in the stone, which usually represent terrestrial objects, such as kangaroos, emus, flying-squirrels, fish, tortoises, and, above all, numerous representations of natives performing the *Coróborry*. This is a sort of war-dance, in which those who participate usually paint their bodies with white lines, like a skeleton, and seen through the obscurity of night, leaping around a faint fire, have the appearance of a set of dead bodies dancing.

If we ask any of the black men of the present generation

the significance of these rock sculptures, they usually reply, in their broken English, "Black fellow make 'em long time ago," and on being pressed more particularly as to their age, they throw up their hands and faces, shut their eyes, and say, "Murrey, murrey, murrey, long time ago!"

The great variety of theories commonly received as to the supposed origin of this singular race of men have done little to dispel the obscurity which prevails as to the real *stirps* of which the Australian race is a branch. Writers who are fond of squaring facts with pre-conceived theories maintain that the first inhabitants of Australia came from Eastern Asia or the Indian Archipelago, and passing Torres Straits gradually overspread the entire Australian continent. Nay, some even go so far as to maintain that there exists to this time in the interior of some of the islands of the Malay Archipelago a race of men identical with the aborigines of Australia. And it certainly is a remarkable fact, that most of the Australian war-songs, dances, &c., have been diffused from north to south, although it does seem venturesome to deduce from this single circumstance a migration from Eastern Asia. Others again hold (such, namely, as Prichard, Wappaus, Burdach, &c.), that the aborigines are of the same race as that inhabiting New Guinea and New Caledonia, and thus make them of the same stock as the Australasian negro. Lastly, a modern naturalist, Mr. James Brown, who lived sixteen years amongst the blacks, considers it not improbable that some Malay crews (for since time immemorial it is known that

the Malays have been acquainted with, and visited the northern shores of, Australia) had been, by shipwreck or some similar calamity, cast away on the coast of the mainland, or on some of the islands near Torres Straits, and had thus become the first involuntary settlers of the north of Australia. This increasing population gradually spread over the interior, and when after some centuries this people had traversed the continent and arrived at the ocean on its further side, they had already lost all recollection of their Pelagic origin, and were no longer capable of deriving any advantage from the sea spread before their astonished gaze. Strange to say, the black populations of Australia seem to be the sole savage race inhabiting the coast of an ocean, who possess no means of transport by water, and are unable to swim! Very possibly the recent expeditions into the interior, undertaken with such ardour and attention to details, may throw some new light upon these aborigines, but equally, if not more, probable is it, that the entire race may have disappeared from the earth before any reliable facts can be ascertained respecting their origin, their migrations, or their history.

The morning after our arrival at Wulongong, and our first acquaintance with the natives, we made an excursion, under the tutelage of Mr. White, to Balgonie Farm, to hunt kangaroo in the forests of the neighbourhood. It was not, however, the large species (*Macropus Major*) we were to hunt, which sometimes attains a height of six feet, or even more, but a smaller kind known as the Wallaby (*Halmaturus uala-*

batus). The kangaroo proper have long since retreated before civilization, and are now only found in the recesses of the forest, hundreds of miles inland. The various participators in the hunt were posted at certain distances in one of the splendid forests, stretching between the Bellambi-Keira and Kemla ranges of hills, while the blacks who accompanied us set forth to drive the game towards us, assisted by their Dingoes, a kind of dog usually supposed to be originally of European race. The blacks use the term "Dingo" promiscuously for every description of dog, whereas the regular wild dog, or rather the dog that runs wild in Australia, is called in the native tongue "Warrigul," and is of no particular breed, but seems rather a mongrel descendant of the sheep dog.

The hunt was not very successful, and of some ten or twelve started by the "beaters," only two were killed. Although one can discern the Wallaby at some distance by its plashing tramp, so that it seems but to need a glance of the eye to bring it down as it flies past on its hind legs, followed close by the dogs, it yet needs great activity and precision of aim to hit the nimble animal as it hops swiftly past.

Yet though we were rewarded with such poor sport, our stay among the splendid woods of the Keira range sufficiently repaid us. The most varied and luxuriant forms of vegetation, changing at every step, almost transcend the wanderer's power of description by their marvellous and enrapturing beauty. Some portions of the forest landscape, where splendid

tree-ferns and gigantic gum trees, enveloped in the folds of the Liana, from which in its turn depended exquisite parasitic plants, reminded us of the brilliant profusion of the tropics. Not less peculiar and uncommon than the vegetation were the sounds that struck our ear from amid the semi-obscure green covert, without our eyes being able to distinguish the singers. And so deceptive are some of these, that one almost involuntarily starts as the loud crack resounds close to his ear of the *Phsophodes crepitans*, known to colonists as the "Coachman's whip," or the *Myzantha Garrula*, or bell-bird, sounds its bell-like note.

During our stroll we came upon several farms, plain wooden huts covered with the glutinous bark of the gum tree, whose impoverished exterior gave little promise of the comfort to be found within, and pleasantest of all was the ready and heartfelt hospitality. Hardly had we set our foot within a hut, ere all the members of the family bestirred themselves to bring milk and butter, eggs and bread, of which they pressed us to partake. In each we visited there was no lack of beautiful china, elegantly carved wine glasses, and Sheffield table cutlery, while the walls were decorated with elegant engravings and wood-cuts. The bread was usually the national institution, known as "Damper," which is simply some meal and water well mixed and heated in warm ashes. It is very palatable, and besides the simplicity of its preparation, the meal well kneaded being baked for an hour as aforesaid, it pos-

sesses the advantage of continuing for a considerable time fit for use.

Our return to Sydney was fixed for the following morning. We were desirous of catching the steamer which plies from Wulongong every second day, as our Commodore, and several of the scientific staff, had received an invitation for the evening at Sydney. As the steamer would first of all start towards noon from Keiama, we employed the hours of morning in a visit to the coal mines of the Keira, and hunting in the adjoining forests. Coal is very abundant in these mines, and is wheeled along a level shaft in small waggons as far as the high road, whence it is conveyed by regular carts to the city. About 200 of these are brought up every day.

Unfortunately our plan for returning by the steamer fell through, as a high wind and heavy sea rendered the entrance of the boat into the harbour a very problematical business. Accordingly, as the boat had not made her appearance by 4 P. M., there was nothing for it but to return by coach to Appin, so as to enable us to reach Sydney in time for our invitation. The cool of evening began now to be felt among the lofty steep hills, over which lies the road to the interior. At first all went well, and the early part of our journey was performed in all comfort and at a rapid pace. But we soon came to some very steep parts of the road, where our tired horses gave out, and could not proceed one step further. By this time we had left the coach, and went on on foot, shooting and

collecting as we proceeded, and admiring the beauty of the landscape around. The coach had stuck fast half-way up a steep ridge, while the horses took no heed of the servants' flagellation. The coarse language in which Mr. Croker, the very type in this respect of an English driver, exhorted Billy and Sam (so were our two steeds named), and the frequent song of the whip, availed nothing; the animals would not budge a step; so we had to lend our assistance in person, and move the vehicle a few paces further to a less dangerous position.

Further progress, under the circumstances, was out of the question. It was resolved to send man and horse back to Wulongong to engage additional horses, and continue our walk as far as the huts at Bargo, the next station, 18 miles distant. *En route*, or at Bargo, it was supposed our coachman would overtake us with fresh horses. As we were by no means sure of our road, we took the precaution of carrying our most necessary effects, in the event of our having to pass the night in the bush.

It was 6.30 P. M., and the sun was going down, only the extreme summits of the trees catching and reflecting his golden beams. On we went, our excitement stimulated by the prospect of an adventure. Gradually the darkness of night enveloped the wood. Our path became uncertain. Even the full splendour of the moon, as she rose in the east, and darted her silver rays through the gloom of the *Eucalypti*, casting gigantic shadows on the sandy soil, rather

tended to confuse us amid this labyrinth than enable us to extricate ourselves. We held on however till 1 A. M., and were just on the eve of camping for the night to await the break of day, when all at once we saw before us the stately fence which surrounds Bargo. With quickened steps we made for the lonely little farm, and hammered at its closed door. A tremendous chorus of barking dogs was the not very propitious welcome of guests arriving at such an unseasonable hour. After repeated knocking the door of the hut was opened; an old man appeared in his night-shirt on the threshold, and gruffly inquired who we were and what we wanted? The reply was not difficult. Our having passed that way before, when we had scraped acquaintance with the old gentleman, likewise stood us in good stead. We were most cordially received, and, despite the lateness of the hour, preparations were at once made to prepare something for us to eat. Tea, coffee, eggs, fresh butter, and damper were carried into the sitting-room, and as far as was practicable sleeping quarters were prepared in the little hut.

The only ill result of our nocturnal fatigues was that we rose late, the sun being high in the heavens ere we awoke. We were just about to ask for our driver, when he made his appearance, and told us he was ready to proceed. He had paid hire for fresh horses at Wulongong, and hoped to make the rest of the journey without further interruption. While they were being put to, we re-entered the hut, and

now perceived the small space within which ourselves, three persons, had passed the night on benches, chairs, and tables. The light of day did not belie the hospitality of our reception. The furniture was rude but clean. What most surprised us was the number of massive books which stood on a small shelf, carefully arranged. They were by much the most valuable part of the furniture, and the proprietor seemed to be aware of this. The books had been the property of a schoolmaster, who had exchanged their spiritual contents against spirits of another nature. The host gave "tick" to the schoolmaster, and thus gradually possessed himself of the entire collection, no inconsiderable number, of interesting works, which now passed from hand to hand on holidays or after the day's work was over; the desire for knowledge of the settlers in this primitive Australian forest thus finding ample room to expand itself in many useful and learned particulars of foreign lands and peoples.

Towards 1 P. M. we reached Campbelton. At the hotel where we alighted was installed a lodge of Odd Fellows, newly instituted. The first visible result of its organization was almost universal intoxication! In the streets and the public-houses, everywhere crowds of drunken men were staggering about. Every third house in Campbelton is a whisky shop! Throughout the colony the consumption of ardent spirits has reached an alarming height, being estimated at £6 per head of the entire population annually! Besides the spirits manufactured in the colony itself, New South Wales imports annually £1,000,000 of wine, beer, brandy, and other descrip-

tions of liquor; a greater consumption of spirits than in any other country of the globe! *

The rest of our return journey being by rail was performed in two hours. The telegraph is in full activity between Campbelton and Sydney, the charge for a message of ten words being two shillings, and two-pence for each succeeding word. Towards 6 P. M. we reached Sydney, driving in the present instance to the Australian club, where accommodation had in the kindest manner been provided for us.

While one section of our staff had been making the excursion southwards which we have just described, among the forests and barrens of the Illawara district, another party visited the sources of Hunter River and the Newcastle stone-fields, whence they returned laden with botanical, mineralogical, entomological, and palæontological collections, samples of coal, fossil plants, and specimens of the Silurian formations.

The most interesting episode in their excursion was their stay on Ash Island, a small isle in the Hunter River, the property of A. W. Scott, Esq., M. L. A., who has settled there with his family. Two of his daughters are hardly more conspicuous by their loveliness and grace than by their profound acquaintance with entomology, which they pursue with the utmost zeal. In addition to geological and conchyliological collections, they have also a carefully classed collection of in-

* In Prussia, the annual consumption of spirits would fill a basin one mile long, 33 feet wide, and 10 feet deep. In England, the annual quantity of *wine* drunk per head is 0·267 gallon; in France it is 19 gallons! The British nation pays annually £70—74,000,000 taxes, and £74,000,000 for spirits!!

sects and butterflies, and at the time of our visit were about publishing a large work upon Australian butterflies. They also have the lepidopterous *fauna* of New South Wales in great variety and in every stage of metamorphosis, in many cases from the very *ovum*, all copiously explained, and their distinguishing characteristics placed beneath in a series of above one hundred tables, which the two ladies, who are accomplished artists both in drawing and painting, have themselves lithographed and coloured.

An excursion was also made from Ash Island to the Sugar Loaf, 3288 feet high, the loftiest mountain in the district. As they had to do 40 miles in one day, the party sprang to their horses as soon as day dawned, and, accompanied by two settlers of Ash Island, laid themselves out for the day's work. First they ascended Hunter River for about a couple of miles, which a little further on headed to the northward, while the cavalcade kept to the left towards the hills. The forest was so clear of underwood, that one could almost ride along as though in a park. Despite the numerous traces of extensive fires, it seemed to have been but little altered by these from its primitive wildness. Occasionally huts and cultivated land were passed; the great proprietors usually give these runs to be cultivated as farms, or make them serve for their cattle, under their own drovers. In winter the cattle run at will in the "Bush," as the settlers call this characteristic scenery, wherever they can find the best pasture for themselves. In summer again, when the great heat dries

everything up, they are foddered with hay under shelter. The sunny forest consists of *Eucalypti, Melaleuca,* and other *myrtaceæ,* splendid *casuarinas, Grevilleæ, Banksiæ,* the native pear (*Hylomelum*), the highly prized Warratah (*Telopea speciosissima*), the all but shadowless *Acacia,* the indigenous cherry (*Exocarpus*), beautiful *Papilionaceæ*, and very peculiar *Stylidiæ*, &c. All these were old acquaintances however of the Austrian naturalists, who greeted them in this their native soil with redoubled interest and astonishment. Covered with blossoms they grew in wild unchecked profusion all around their path, so that the very horses frequently trod them under foot, scenting the air with an aroma which in Europe can only be obtained by lavish expenditure. Numerous birds, chiefly parrots, circled round the tops of the trees; the crow-like *Strepera graculina*, the bald-headed *Tropidorhynchus corniculatus*, the "Jack ass" (*Dacela gigantea*), so highly regarded and carefully tended by the colonists on account of its admonishing them of the presence of poisonous serpents, quantities of chaffinches (*frigellidæ*), the fan-tailed flycatcher (*Muscipiada*), the *Climacteris*, which runs up and down the trunks of the trees like our own wood-pecker, the monitor lizard, four or five feet in length, which flits rapidly to and fro among the trees, the prickly chameleon, and beautiful specimens of fossil helix, all furnished a rich reward for the zoologist.

After a ride of three hours the party began to approach a steep wall of rock, where the horses were left, as they had now to prosecute their journey on foot, till at length they

came to a confused mass of coarse, breccia-like sand-stone, constituting what is known as the Sugar Loaf, whence they had to toil laboriously among the rocks till they reached the summit. A marvellous panorama was spread out before them; the whole county of Northumberland, with its green forest clothing, was stretched out at their feet in all its sun-lit splendour. To the left far in the distance was visible the township of Maitland, and the navigable part of the Hunter River, which wound along like a silver band till it was lost in the distance, where it fell into the Pacific, on whose seething billows the stately ships looked like small white specks on a confused, uncertain back-ground. Far in the distance to the right, half concealed by the forest, was Lake Macquarie. The colonial members of the party described the latter as very difficult of access, but as a veritable paradise for the sportsman, since it is frequented by black swans in hundreds, the Australian stork, curlews, the hook-billed creeper, cormorants, and an infinite variety of water-fowl. The Blue Mountains formed the back-ground of this splendid landscape. The whole neighbourhood is pretty well settled and cultivated. Here and there wreaths of blue smoke indicated where the huts of industrious colonists lay concealed in the forest. Their conductors were not a whit behind the strangers in their appreciation of the panoramic effect; they had never scaled the summit before, although the elder had lived 15 years at Ash Island, and had often been as far as the top of the first rocky ascent in search of strayed cattle.

Lost in delighted contemplation of the beauties of nature, no account was made of the passage of time, so that part of the return journey had to be made in the twilight. It was a delightful, clear, moonlight night. The deep stillness in nature was only occasionally broken by the shrill cry of the curlew (*Numenius arquata*), from the neighbouring swamps, or the rustling of Wallabies disturbed by the tread of the advancing horsemen. Buried in a sort of dreamy charm that could find no utterance, the riders left their horses to choose their own pace over the sward, hardly able to realize that they were indeed under the unclouded brilliancy of an Australian sky, traversing the forests haunted by the timid kangaroo and the swift but shy emu.

Unfortunately it was found impossible, owing to want of time, to visit the Blue Mountains and the gold regions around Bathurst. We had to content our curiosity as to the products of the gold-fields by examining the nuggets exhibited by the fortunate finders in the jewellers' shops of George Street, Sydney, and the particulars furnished in the daily papers of the well-authenticated riches of the gold-fields of the oldest colony. During our stay a lump of gold was discovered in the Western district weighing 150 lbs., and worth £6000. Such instances of good fortune only tend to raise fallacious hopes of being equally fortunate in the breasts of thousands of men. Shortly before our arrival, on the news being promulgated of the new Eldorado in the north near Port Curtis on the Fitzroy, not less than 16,000 men flocked

thither from New South Wales and Victoria. This enormous influx of human beings to a district totally unprovided with either shelter or provisions for such a horde resulted in unutterable suffering. People had sold their goods in Sydney for whatever they would fetch, in order to be the first in the gold-field with the requisite implements. Many lost their entire means of support, having even sacrificed the most favourable prospects in the eager thirst for gold and sudden prosperity. The streets of Melbourne and Sydney were filled with gold-seekers, who, laden with blankets, household utensils, axes, and spades, were laying down their last farthing for passage tickets, and rushed breathlessly to the ships which were to convey them to the newly-discovered gold-field. The voyage began under the most rose-coloured anticipations of brilliant success. But scarcely a month later came most depressing intelligence from Port Curtis. Here was a set of lawless desperadoes, deceived in their expectations, without food, clothing, or even the object of their search, in a remote part of the country, with the hot season coming on, and no means of returning! Men were seen selling for a few shillings implements that had cost pounds. The whole road from the supposed gold-fields to the landing-quay was strewed with diggers, who, footsore and fainting under the heat, were toiling towards the coast, where they rushed in wild confusion on board the ships which were to convey the victims back to the colonies they had left at so much sacrifice and with so extravagant expectations!

It was only the energetic measures taken by Government, by whom provisions were forthwith despatched to the wretched make-shifts of settlements improvised on the spur of the moment, and gave numbers free passages to Sydney and Melbourne, that prevented some serious disaster. A few months later the place so suddenly populous had become once more a despised solitude, and Rockhampton had resumed its wonted state of a hamlet consisting of two or three houses. In Sydney, however, the famished crowd seeking after work kept wandering about, thankfully accepting the soup which the charity of their fellow-citizens supplied free of charge.

During these various excursions of the scientific staff, the frigate had, thanks to the kindness of H. E. Sir Wm. Denison, been taken into the Government dry dock at Cockatoo Island in order to facilitate her extensive repairs. The *Novara* was, as the chief engineer himself allowed, the largest man-of-war which had ever been docked, not merely in Port Jackson, but anywhere in the Eastern hemisphere.

The Fitzroy dry dock, which had not long been completed, is 300 feet in length (since lengthened another 100 feet), 60 feet wide, and will accommodate vessels drawing 19 feet water. In preparing this splendid structure, which took eight years to complete, a huge rock 50 feet high was first blasted, the excavation began on the land-side, and on its completion a gate opened towards the sea. All being right thus far, a subaqueous mine was sprung by means of large

diving-bells, the excavations being charged with two or three lbs. of powder. A steam-engine of 40-horse power pumps the dock dry,* besides being geared to set in motion the various machinery in the shops, such as lathes, iron planes, &c. The dock gates are iron-plated. Although constructed entirely by convict labour, the expense was enormous, since to overcome the extraordinary difficulty presented by the soil, the entire machinery, down to the very smallest tool, had to be imported from England.

The frigate lay about a week in dock. Besides the usual handicraftsmen there were upwards of thirty caulkers employed, each of whom was paid 14*s*. per diem, net, but the entire cost was 17*s*. a day, as each man was conveyed to and fro, morning and evening, at Government expense. But as provisions are high, the workman can save by the end of the week little if at all more than the English labourer who does not receive one-third of his wages. At present there are on the island 360 prisoners, all such as have been sentenced to ten years penal servitude at least. This establishment was, however, to be broken up, and the convicts distributed among other prisons, so soon as the dock was quite completed.

The main features of a prison reform, contemplated by Sir Wm. Denison, with the praiseworthy object not merely of prevention of crime, but of ameliorating the moral condition

* The rise and fall of the tide at Port Jackson is very small, not above four or five feet.

of the criminal, consisted in the classification of criminals according to the nature of their crime—co-operative labour during the day, solitary confinement at night, and a certain amount of remuneration for work performed, so as to stimulate to habits of industry by a visible reward, and a scale of dietary barely sufficient to maintain life, any additional delicacy being paid for out of the man's own earnings, yet not so as to entirely exhaust his wages, the balance of which thus went on accumulating, so as to give him a small sum of money in hand, when, his sentence expired, he was set at liberty with, it is to be hoped, freshly-acquired habits of industry. To facilitate this benevolent plan, Sir William bethought him of erecting the prisons in the neighbourhood of Sydney, where there is more of a market for convict labour, and recommended the construction of roads. The number of prisoners at present in New South Wales is about 1260, whose support costs on an average £36,000 per annum. In order to adapt to the existing prisons the new system put in operation by the late Governor-general, and extend it to 1600 men,* there would be required a further outlay of £69,000, but one-third of the present annual outlay for sustenance would be saved.

On 25th November the *Novara*, thoroughly overhauled and rejuvenated, returned to her former anchorage near Garden Island, and the following day commenced a series of festivities, which the German residents at Sydney had got up

* Viz. 1400 men, and 200 women.

to welcome the Imperial Expedition, commencing with a serenade, given by the German Singing-Club, who hired a large steamer, the *Washington*, for the occasion, which they had gaily decorated with foliage and coloured lamps. Amidships there was a splendid transparency, with the word "Welcome" inscribed in letters of light, above which was a very neatly executed Austrian eagle. Upwards of 300 guests shared in the fête. At 8 P. M. the vessel got under weigh from Circular Quay. With the first plash of the paddles the music struck up, and the ship glided off, as though on the wings of Harmony, towards the grand-looking *Novara*.

Unfortunately the weather proved very unfavourable. To an oppressingly hot, close, sultry day of entire calm, the thermometer marking 109° Fahr. in shade, there had suddenly sprung up a "Brickfielder,"* that dreaded south wind, which may be considered one of the worst plagues of Sydney, owing to the clouds of dust. It now put German patience and German good-humour to a severe proof. At each tack of the steamer it blew out a whole row of variegated lamps and illuminations, which, however, were as perseveringly relit. It had been firmly resolved, however,

* This is the nickname given to the violent S. or S.W. wind, fortunately of short duration, which so frequently springs up towards evening from the "Brickfields," because it brings with it such volumes of sand and dust from the eminence known as the Brickfield lying S. and S.W. from Sydney, enveloping the entire city in murky clouds of dust. The "Brickfielder" is a pretty safe guide as to the weather, as soon as it blows the whole sky becomes suddenly covered with clouds, and cool rainy weather follows upon the previous heat.

to let nothing mar the success of the festival, and the old indomitable German "pluck" came out victorious in its contest with the "Brickfielder." Amid the full clangour of the bands of music were heard shouts of jubilant mirth, mingled with the howling and whistling of the wind, and the rush and roar of rockets, while the occasional firing of Bengal lights shed their magic effect over the parti-coloured crowd on board, the ships in harbour, and the agitated waters below. At last the steamer got near the frigate, which she swept round in a wide graceful curve, and dropped anchor at a little distance away. At that moment a considerable number of port-fires were lit on board the *Novara*, bathing the entire scene, including the stately ship herself, in an absolute deluge of light, guided by which a number of boats put off with the company, who despite the weather were all enabled in safety to gratify their curiosity as to the effect of nocturnal festivities.

One of the frigate's boats was manned and despatched to the steamer, to bring on board the *Novara* the committee who had been entrusted with the presentation of an address.

On board the *Novara* the utmost excitement prevailed, almost all the officers and petty and warrant officers being on deck, the band playing nothing but German music. The evening ended as it began, with music and melody, such a thoroughly German welcome making a profound impression upon the English of Sydney.

The following day the German clubs of Sydney invited

the staff to a ceremonial banquet, the saloon in which dinner was served being elegantly decorated with the flags of the various German states, between which were excellent likenesses of the Emperor and Empress. Upwards of seventy guests sat down to a sumptuous repast, after which free flow was given to the expression of the warmest wishes for fatherland and the German nation.

While these festivities were going on, the English mails brought the intelligence of the birth of an heir to the throne! So signal a cause for thankfulness on the part of Austria was duly observed at the uttermost ends of the earth, and on 27th November the thunder of the *Novara's* cannon announced the glad tidings to the colonies of the southern coasts of Australia! Salutes of 21 guns were fired at morning, noon, and sunset, while on board our ship, which was decorated with all her colours, a solemn *Te Deum* was sung, after which the crew were mustered on parade. The English ships of war also "dressed," and returned our salute by one of a similar number of guns. On the 30th there was a ball on board, to which 400 guests were invited, many of the *élite* being overlooked through sheer want of space or accommodation!

The hospitality extended to the Austrian officers was not however confined to these public receptions, when they were thoroughly "lionized" during their stay, but also included a constant round of invitations among private circles, among which, without making invidious selections, where we can

but feel a lasting recollection of the cordial kindness we everywhere experienced, we may specify those of H. E. Sir Wm. Denison, Sir D. Cooper, Speaker, Stuart A. Donaldson, Esq. Chief Secretary, Dr. G. Bennett, the eminent physician and naturalist, M. W. Sentis, French Consul, and Captain Mann, chief engineer of the docks.

Here also our thanks are due to an estimable Austrian lady, a native of Vienna, who, wafted on the pinions of Hymen to Australia, has not a little contributed to uphold in that distant region the gentle dignity of the Viennese ladies, and the renown of Germany for musical supremacy. This lady, widely known in artistic circles as Mlle Amalie Mauthner, is now Madame R——, having a few years since married a German gentleman settled in Sydney. Quitting her home under the most auspicious anticipations for the future, the newly-married lady arrived in Sydney just in time to see her husband's house of business succumb under the first of the great financial crises. Instead of a life of affluence and ease in the gold country, the sorely-tried lady was compelled to display her irresistible energy and activity by availing herself of her eminent musical attainments. The charming artist was speedily recognized and cordially supported in Sydney. The wealthiest and most distinguished families considered it an especial favour to be permitted to place their children under Mad. R——'s tuition. Her concerts became the most fashionable of the season, and the dark cloud which had gathered above the young inexperienced wife

on her arrival in Australia, had, thanks to her marvellous energy and activity, gradually been dispelled, leaving a bright sunny horizon of felicity and content.

We had but little opportunity of observing the phases of political life in Sydney, our arrival being coincident with the "dead season" of politics. We were just in time to be present at the spectacle of the prorogation of Parliament. This ceremonial took place in the chamber of the Legislative Council, the Governor-general officiating in person. The second chamber, or Legislative Assembly, was, as in England, represented simply by a deputation. Punctually at noon Black Rod threw open the doors and announced in grave but loud tones, "His Excellency the Governor-general of New South Wales," upon which Sir William Denison entered the apartment with much dignity, and assumed his seat under a sort of canopy. By his side stood the Ministers, his private secretary, and an aide-de-camp. Before him sat the President of the Legislative Council, and other high dignitaries. Sir D. Cooper, Speaker of the Assembly,—whom we scarcely recognized in his strange official costume, a black silk single-breasted coat, richly laced with gold, and an immense full wig,—delivered a short address, to which the Governor-general briefly responded, and the ceremony was over and the Parliament prorogued. Australia now enjoys such a free constitution, modelled after the English form, the administration of the various colonies is so entirely autonomous, their duty to the mother country so insignificant (so far as outward form

goes), that the colonists seem quite content with their present administration, and the mal-contents, who once advocated separation and independence, even to the length of ventilating the subject in Parliament, have now been reduced to utter insignificance.

Each colony has, by the "New Constitution Act" of 1851, been provided with the utmost freedom of self-government, the British Government only reserving the right of veto in those cases where the colonial laws should happen to run counter to the common law of the Empire. One hears, it is true, many prognostications as to the result of dividing the country into so many independent colonies, and having so many parliaments, especially as to the immense preponderance that the inhabitants of the cities must have over the scattered country population. A few even seem to be of opinion that they must contain many elements eminently unsuitable to the vitality of a mutually reliant, cohesive, law-abiding confederation. But although some passing blots and temporary defects may be dragged to the light of day, it must not be overlooked that the Australian continent is almost as large as Europe, and that each of these colonies covers more superficial area than most of the European states. As the laws and administration are the same for all these, it is more probable that the anticipated break up of moral power will rather take the form of developing true political life, so that the masses will more honourably and surely be enabled to appreciate their constitutional rights and duties.

A few days before our departure some of the scientific staff had further opportunity of communicating with the "blacks." It was important to extend our collection of craniological specimens for that branch of study, by comparing the various races of men with each other, so as to enlarge our knowledge of the physiological peculiarities of either sex and every race; and as we had been told that numbers of skulls could be procured among the *Gunyahs*, or sand-stone cavities of Cook-River Bay, which had been a favourite burial-place of the aborigines, we made an excursion thither, still accompanied by our staunch friend, Mr. Hill.

Our light vehicle rattled merrily through the suburbs of New Town, a sort of suburb of Sydney, thence over the Cool-River Dam, 1000 feet wide by 200 feet in length, to Coggera Cove, where several of the aborigines had pitched a temporary camp. These were two Mestiza women with their children, and Johnny, the last of the Sydney blacks, who might be about 40, and was a cripple in consequence of an injury sustained in childhood. In 1836 there were 58 still alive; now Johnny is the last remaining survivor!

We set off from Coggera Cove in a small, but safe, and well-built boat, rowed by Johnny and some white colonists, bound for Cool-River Bay, but our search in the sandstone caverns was unfortunately fruitless. Johnny then conducted us to a spot where Tom Weiry, one of the last of the chiefs, who lived at the mouth of Cool River, and died about twelve years previous, had been buried. Tom Weiry, or Tom Ugly,

as the English named him, was a very athletic man, whose skeleton was a real prize for the purposes of comparative anatomy. Close to the spot where, according to Johnny, the last remains of the Australian chief reposed, were large quantities of empty oyster-shells, indicating that the place in question had once been a favourite resort of the "blacks," attracted thither by the prolific yield of this place in those shell-fish, one of their most highly appreciated articles of food. At various spots traces of fires were visible. The aborigines of the coast usually bury their dead clothed in the woollen blanket they wore in life, with the heads seaward, and near the coast, with but a few feet of earth over them. Unfortunately we had our pains for our reward, although Johnny repeatedly assured us he had himself, in picking up shell-fish, on that very spot seen projecting from the sand human bones, that frightened the superstitious fellow from prosecuting his search in that direction. Indeed, Johnny was positive some other exploring naturalist had been there and walked off with our contemplated anthropological prize.

We returned, our object unachieved, to our boat, and so back to Coggera Cove, where we found tea and chocolate prepared in the renowned "black pot," that figures so much in bush life, off which we made an excellent repast. With true kindliness Mr. Hill shared what we had brought with us with the aborigines, who, on their part, showed themselves very obliging and attentive.

A second excursion, still in Mr. Hill's company, was made

after craniological specimens to Long Bay, twelve miles distant, among whose thickets a few natives had been residing for some weeks. The road thither passed through gum-tree forests, varied by wide grass plains covered with the many-blossomed *Metrosidero*, with its long deep red stamens, and brilliant *Melaleuca*, its twigs also nearly covered with white flowers, among which rose the tapering flower-stem, ten or twelve feet high, of the *Xanthorrhea*, something like reed-mace, surrounded by flights of humming-birds, which were imbibing its delicious nectar with their long bills. Great quantities of little birds were swarming about the brushwood and rushes, occasionally coming quite trustfully so close to us that we could have caught them with a butterfly net. We had been riding perhaps an hour or two when Mr. Hill suddenly began to call in the native manner. Those forthwith summoned by this quite unique sound replied from the thicket, as if recognizing the approach of a friend, and in a minute or two more we found ourselves in the midst of a number of aborigines of both sexes, mostly naked, or with a coarse woollen cloth around them, lying at full length on the ground in listless ease. Close by was a fire, over which was suspended a kettle filled with water. A couple of mangy hounds covered with sores were basking in the sun, heedless of the footfall of our horses, lying as indifferent as their masters till we had dismounted and seen our beasts attended to.

It is extraordinary to see how few necessaries these people seem to have, and how little ambition they have to better

themselves, so long as they can indulge their vagabondizing propensities. There is assuredly no nation on earth that so aptly illustrates Goldsmith's words,

"Man wants but little here below,"

as the black race of Australia.

Those we were now visiting had come from the districts of Shoal Haven, Port Stephens, and Illawara. There were three men and as many women, one of whom, a Mestiza, named Sarah, with two half-blood little children. One of these, which, although above two years of age, was still at the breast, had a skin quite white, red cheeks, and light blue eyes, and could scarcely be distinguished from the child of white parents. These presented so characteristic a type of the race, that we could not resist an attempt to make with them some of those admeasurements of the body already alluded to, while the artist attached to the Expedition delineated their appearance.

The skull of the Australian black is tolerably regular, the forehead broad and high, the bridge of the nose pretty high, the eyes dark, brilliant, and sunken; the nose and cheek-bones well marked. The mouth generally is broad, the upper lip overhanging the under, and the upper teeth also project beyond the under. The face, like the entire body, is hairy in an unusual degree; the hair of the head is black, thin, often very fine in texture, and slightly crisped without being woolly. The skin is usually dark or dirty brown, or brownish black. The custom of marking the outer arm from

the shoulders downwards with three or four marks, from 1 to $1\frac{1}{2}$ inch long, and rather thick in the cicatrix, and continuing over the back with similar incisions, is pretty universal, and seems to be considered as a personal decoration. The elder people have the nasal cartilage bored through, and wear in the orifice kangaroo bones, or other bones, or even pieces of wood as amulets. We did not however remark this among the younger generation; this hideous custom seems to have died out, apparently on account of its discomfort.

The stay of the *Novara* in Australia was, as already remarked, so brief, that it did not admit of the scientific staff making more distant tours to the great cattle "stations," or gold districts. At the same time it appears to us important to make some few observations on these two products, to which Australia is indebted for her present prosperity, and the former of which is fraught with even more of its future destiny than the latter. At the commencement of the present century England used to procure all her wool from Spain, and somewhat later from Germany * and Hungary. Since that period the production of wool in the Cape, the East Indies, and Australia, has so enormously increased, that Great Britain is enabled to get from her colonies the entire consumption she requires for her woollen manufactures, averaging from 60 to 70,000,000 lbs., thus utilizing the agricultural

* The imports of wool from Germany had, in 1836, risen to 31,766,194 lbs., but it has since then rapidly receded, owing mainly to the increased production in the English colonies.

energies of her emigrating children for the behoof of the mother country and her industrial classes.

New South Wales produces at present (1858) above 17,000,000 lbs. of wool, the whole of Australia about 50,000,000. The number of sheep has increased from 29, imported by the first colonists in 1778,* to 8,139,160 in New South Wales alone, the total for all Australia being about 15,000,000. Some proprietors have upwards of 100,000 sheep, which they divide into flocks of from 2000 to 3000, which are in charge each of its respective shepherd, who keeps them in their own special "runs."

The most suitable place for breeding sheep is Moreton Bay, lately raised into a new independent colony by the name of Queen's Land. The sheep there need but little attention, and the maladies to which they are subject in the west and south never occur in that colony. Were it not for the

* We present an official account of the live stock in the settlement at Port Jackson, May 1st, 1788, which forms an interesting contrast with the development of its resources since that period:

To whom belonging.	Stallions.	Mares.	Colts.	Bulls.	Cows.	Sheep.	Goats.	Hogs.	Pigs.	Rabbits.	Turkeys.	Geese.	Ducks.	Fowls.	Chickens.
Government ...	1	2	—	2	2	Ram 1, Ewes 12, Wethers 3	1	20	—	—	—	—	—	—	—
Governor ...	—	1	3	—	2	Ewe 1, Lamb 1	—	10	—	3	5	8	17	22	—
Lieut.-Governor	—	—	—	—	—	—	1	1	7	—	5	6	4	9	—
Officers & men of the detachment	—	—	—	—	1	—	12	10	17	2	6	9	8	55	25
Staff	—	—	—	—	—	11	5	7	1	—	2	6	6	36	62
Other individuals	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Totals	1	3	3	2	5	29	19	49	25	5	18	29	35	122	87

At present there are in this colony, 180,000 horses, 2,148,660 cattle, and 109,160 pigs.

ravages of the wild dogs, the rearing of sheep would be attended with hardly any expense. These are pastured on the crown lands, for the use of which each squatter pays £10 per annum for every 4000 sheep, or 800 head of cattle. In the north, "Darling Downs" are considered the best, consisting of an open undulating table-land, broken here and there by occasional clumps of trees, and much resembling the States of Minnesota and Iowa, north and west of the Mississippi. On these Downs from 3000 to 4000 sheep can easily be kept by a single shepherd, whereas in Bathurst 800 would call into play all the watchfulness of a single individual. On Darling Downs the annual increase of a flock of 100 ewes is 96 per cent.; in Bathurst it is only 80. The value of a sheep is about 15*s.* to 20*s.*, and the shearing usually begins in October and lasts till December, the average weight being $2\frac{1}{2}$ lbs. to the fleece. Innumerable teams of oxen carry the wool in bales of 200 or 300 lbs. from hundreds of miles in the interior down to the seaports, where the oxen and carts are usually sold, as, owing to the low price of cattle, it would not be remunerative to take them back without a freight. While we were in Australia an attempt had been made, at much cost of time, trouble, and expense, to import from their native Cordilleras a large number of Llamas or Alpacas, with the view of increasing the value of Australian wool by a cross with the Peruvian. An enterprising English merchant of Valparaiso, named Joshua Waddington, who had been 40 years resident

in Chili, was a chief promoter of the undertaking. In 1852 another Englishman had undertaken to convey 500 alpacas to England, but, despite the utmost care during the voyage, only three were landed alive. Waddington attributed this disaster to the want of fresh food, and therefore hit upon the expedient of accustoming those animals which he intended to send to Australia to the use of dry fodder, such as barley, bran, and hay, for some time before their embarkation. As soon as they had become somewhat inured they were shipped at Caldera, near Copiapo, and entrusted to the care of Mexican Indians accustomed to their habits, for transport to Australia. The vessel was of 800 tons burthen, and was chartered at 6000 dollars for the voyage. The fitting up of the vessel for her novel cargo cost about 300 dollars. Each animal, in addition to its ration of dried food, had a quart of water per diem. The voyage from Caldera to Sydney took 70 days. Of 316 llamas shipped or born on the voyage only 36 died, 280 arriving in excellent health at Sydney, and were with all speed turned into a large pasture on the Government domain.* For weeks the negotiations remained in an anxious suspense, in consequence of the original projector of the undertaking, an adventurous Yankee, named Ledger, who had purchased the animals in the interior of Peru, and after four years of unwearied assiduity had accompanied his charge

* The sheep-breeders of the colony competed for the honour of purchasing these valuable animals.

hither, standing out for a large sum by way of reward. Long after we had left Sydney we learned that the 280 llamas were sold to a company of sheep-breeders at £25 a head, or for £7000 sterling the entire herd, the value of an animal in Peru being two or three dollars.

The yield of the various gold-fields* in the west, north, and south of the colony, though nothing like so great as in the neighbouring colony of Victoria, yet contributes in no inconsiderable degree to the annual revenue of the state, and maintains a considerable commerce with other countries. According to official reports, the amount of gold taken out since its first discovery in March, 1851, to the end of July, 1860, was 2,587,549 oz., worth about £9,600,000. Besides this, however, a considerable quantity of money was brought to the coast by private conveyance, where it was smelted down, since the entire yield of New South Wales in nine years was £12,696,231, besides £3,096,231 in the State Treasury and Mint, according to official returns.

The rumour that gold was to be found in Australia was first set on foot by the Rev. H. F. Clarke, a Protestant mis-

* The distance of the various gold-fields from Sydney and the various harbours of the colony is as follows. *Western Gold-fields*,—Bathurst 110 miles, Sofala 140, Orange 141, Ophir 146, Mudgee 155, Tambaroora 157, Meroo 160, Louisa Creek 176, Tuena 190. *Southern*,—Goulburn 125, Queanbeyan 182, Braidwood 184, Bill's Creek 190, Araleun 200, Sundagai 244, Cooma 254, Tumut 264, Adelong 273, Albury 286, Obin's River 410, Kiandra or Guoroy River, over Twofold Bay and Bambula, 240 miles. *Northern*,—Hangus Rock 304, Bingera Creek 365, Rocky River 357, Tamworth 280, Timbarra 67 miles from Clarence River, viâ Grafton, overland. The other gold-fields of the Clarence River District, such as Lubra, Toolam, Emu Creek, Pretty Gully, Sandy Creek, Table Land, Nelson's Creek, &c., are 80 to 100 miles from the river.

sionary and well-known geologist, who so far back as 1841 found gold in the hills W. of Vale of Clyde, and had even then proved to several influential personages by unmistakeable evidence the existence of gold-quartz, with the remark that in Australia, especially the province of Victoria, all scientific indications were in favour of there being a great amount of gold. But the learned country parson found at that time little attention or interest, as well in consequence of its then being still a penal colony, as of the ignorance at that period universally prevalent as to the value of such indications.

Ten years later a certain Mr. Hargrave adopted the rational course of visiting California, where he made himself master of the various means of obtaining gold, after which he returned, and commenced to wash for gold in Summer Hill Creek, Victoria, and thus became the practical discoverer of the gold-fields, the special contributor to the development of the resources of the country. The committee of the Legislative Council, to whom was entrusted to examine and report upon the claims of individuals as to the honour of having discovered the Australian gold-fields, added to the minute of 10th March, 1841, that Mr. Hargrave, who had so disinterestedly thrown open to all this inexhaustible mine of wealth, ought to receive £5000, and Rev. W. H. Clarke £1000 in recognition of his mineralogical researches, which had conduced to the same result. The first Australian gold, 18 oz. in weight, was landed in London by the *Honduras* on 20th August, 1851. Thenceforward the importation increased

with each month, the amount by the end of the year having reached 240,044 oz., worth £871,652. The following year the amount extracted was 4,247,657 oz., value £14,866,799.

The crowd of gold-seekers and adventurers, attracted by the discovery, was something tremendous. From the commencement of Sept. 1851, when 29 men were engaged in washing at Anderson's Creek, to the end of December, only four months, the population of the diggings reached 20,300; in 1852 they numbered 53,500, in 1853 75,626.

Shortly after the discovery of the gold-fields, the Colonial Government appointed special officers, the well-known "Gold Commission," to watch over these improvised settlements. They published "Regulations for the management of the gold-fields," and sold licenses, at 20*s.* or 40*s.* according to yield, for the privilege of digging within certain limits; the localities most in favour being Ballarat, Mount Alexander, Castlemain, Sandhurst, Beechworth, and Heathcote.

The gold obtained in 1852 was valued at from 58*s.* to 60*s.* per ounce. The banks made advances at the rate of from 40*s.* to 55*s.* per oz., or exchanged the gold-dust at from $8\frac{1}{2}$ to 10 per cent. discount for coined money. The freight was $4\frac{1}{2}d.$ per oz. In 1858 the value of the ounce had risen at the "diggings" to from 70*s.* to 77*s.*, and the discount had fallen to 1 per cent., and the Insurance Company charged for gold transport a premium of from $1\frac{3}{4}$ to $2\frac{1}{2}$ per cent.

Since that period gold has repeatedly been discovered in fresh localities of the adjoining colony of Victoria, the "yield"

and the number of diggers being also steadily increasing. Many thousands at present leave New South Wales annually to try their fortune in other fields than those of agriculture. In 1857 upwards of 26,000 persons left this colony for Victoria. Consequently, the price of labour has risen throughout Australia, and while it has thus increased in expense it has become more uncertain and unreliable. A large number of buildings, especially in the country, have been left unfinished, and the clearing and cultivation of numerous tracts of land have been abandoned. These temporary evils, however, cannot be permitted to outweigh the enormous advantages derivable from the discovery of the gold-fields of Australia. It has attracted the attention of universal mankind to a distant British colony, hitherto almost unnoticed, it has peopled the country with magic celerity, centupled the value of the land, made its results appreciable in the remotest districts of the globe, and raised the colony of Victoria within a few years, in national prosperity, increased trade, and extended cultivation, to a degree of importance usually the slow growth of centuries of industry.

The discovery of the gold-fields had at the same time important scientific consequences, chiefly in the way of geological researches, which resulted in proving that the widespread popular opinion, that the Australian continent belongs to the latest geological era, and had comparatively recently emerged from the sea, is entirely erroneous. Rich palæontological collections confirm the opinion that Australia is not the latest, but rather the earliest, continent. In several parts

of the colony the fossil remains of various colossal animals have been discovered, which, as since measured, must have stood from 10 to 16 feet in height, and correspond to our diluvial Pachydermata in Europe. In like manner, with the exception of some quite insignificant tertiary strata of small extent, only crystalline rocks and primary formations (from the Silurian upwards) form the chief bulk of the continent. The entire series of secondary strata seems to be absent. From this fact it necessarily results that Australia has been a continent since the end of the primary epoch, that it never has been covered by the sea, but remained ever since the beginning of the secondary formations, through all those countless ages during which Europe was being convulsed by the most tremendous geological revolutions, a habitable soil, on which plants and beasts, undisturbed by change in the inorganic world, might have continued to flourish down to our own times. Viewed in this light the fauna and flora of Australia would be the most ancient and primitive in the world.

Another Austrian naturalist, the well-known botanist Professor Unger of Vienna, has come to the same conclusions from the fossil remains of some Australian plants, accompanied by the further singular deduction, that Europe must have been at one period in much closer accordance with this remote region. Many forms of plants, especially *Proteaceæ*, which at present form such a peculiar feature of its vegetation, seem to have been similarly prevalent in Europe at

that remote age of the globe. But if even it be accepted that during the Eocene or earliest tertiary period there existed in Europe under similar climatic conditions flora of *Coniferæ*, *Proteaceæ*, *Myrtaceæ*, and *Casuarinæ*, such as Australia now possesses, the question still arises as to how the vegetation of a locality so remote should have been transferred to antipodean Europe? Making all due allowance for the astonishing influence exercised by winds, waves, and the migration of animals over the diffusion of vegetable species, yet the means of transport by the ocean or by currents of water is confined within narrow limits, and under the most favourable conditions is limited to the very few plants which can maintain their powers of reproduction uninjured by immersion in water, and those on the other hand which, on being transported to a strange shore, find there the means of existence and increase. As, moreover, the observations which Professor Unger has made upon the diffusion of species of plants at that remote period, and their very accurately circumscribed limits, run directly counter to the opinion of those naturalists who hold to a variety of centres of development, (instancing a case where one species of plants is found in two widely separated regions,) have never been satisfactorily refuted, the learned botanist thereupon proceeds to the conclusion, that during the Eocene period Australia was united to the main-land through the Moluccas. This land route has been followed at one period by *Araucarias*, *Proteaceæ*, sandal wood, and a hundred other varieties of tree

and shrub, which till that connection was made could not diffuse themselves, so as thus to reach the European continent, where they are even now found, despite the lapse of myriads of years, in the shape of well-preserved fossils. Thus too, for similar reasons, the geologist to our Expedition, like Professor Unger, regarded Australia as not a youthful, lately-born continent, but a country decaying with antiquity, which had played its part in the physical history of the globe, and had spread its scions far and wide. Some alteration of level is not merely indicated by the numerous coral reefs encircling Australia and its island groups, pointing to a similar sinking among them as that already noticed among the smaller Polynesian islands:—The whole characteristics of the soil, the wastes of the interior, the innumerable salt lakes, the rivers which lose themselves in these, &c. &c., tell of a coming geological transformation, which however—we mention this for the consolation of the settlers—may yet be postponed for myriads of years.

The system of transportation, concerning which so loud an outcry has recently been made, has so materially assisted in developing the resources of the country, that it would hardly be right to quit Botany Bay without a few remarks on the penal colony which was in existence there till 1840. For there is no spot on the globe better adapted than New South Wales to serve as a stand point, whence any one might accurately study the advantages and drawbacks of the English transportation system, as also its influence upon a strongly

recalcitrant society. In brief, we purpose to subject the system as it subsisted for half a century in Australia to a thorough analysis, inasmuch as it seems to us that, in our present unnatural social conditions, transportation, i. e. the sudden transference of the criminal to totally new conditions of external life, seems to furnish the much desired turning point whence we may expect a lasting moral improvement of the individual. Our Austrian prisons, especially those in which the cell system has not been introduced, are simply houses of detention, not penitentiaries, still less reformatories. The incarcerated criminal is a burden to himself and to society, to which he is only in the most exceptional cases restored improved by confinement. The charge of maintaining him increases year by year, without any return being made by utilizing the labour of the prisoner. In penal colonies, on the other hand, the convict works as much for his own benefit as for that of society. He throws open new immeasurable tracts of land to civilization, trade, and industry. The evil effects of certain climates upon the health of the convict can be corrected by proper ordinances, till it is reduced to a barely appreciable minimum. The free settler is also exposed in unsettled countries to dangerous illnesses, but as his circumstances improve these disappear before the cleared forest, the cultivated patch, the drained swamp.

We do not believe that were the option left them there is one solitary individual in our Austrian prisons, condemned to periods of imprisonment of ten years and upwards, who would

not willingly exchange his sojourn at home for one in even the insalubrious islands of the Indian Ocean, if the prospect were held out to him after a series of years of steady labour and honest activity, that he might make his new-found activity available to secure his liberty. What may be made, however, of a valueless wilderness by means of compulsory labour, we have at this day an example of in the case of the first penal colony of New South Wales. Even the objectionable manner in which the system was administered during more than fifty years in Australia and Van Diemen's land could not entirely destroy its beneficial effects upon the criminal, or blind an unprejudiced observer to the advantages and general utility of transportation as a means of punishment.

In 1787 the eastern coast of Australia, chiefly in consequence of the too glowing accounts of the suitability of the harbours, and the fertility of the soil of Botany Bay, was selected by the British Government as the site of a penal colony, and on the 26th January, 1788, the first batch of convicts was landed there. These consisted of 600 males and 250 women, and were accompanied by an escort of 200 men. Forty of the latter were married men, who were accompanied by their wives and children. The whole expedition was under the command of Captain Phillip, the first Governor of the new settlement.*

* The colony of New South Wales consisted at that period of the entire land comprised between Cape York in 11° 37′ S. to South Cape, 43° 30′ S., and as far as 135° E. in the interior to the westward, including all islands adjoining, comprised within those degrees of latitude.

The colonists had scarcely settled down after their arrival on, as was speedily found, the anything but safe or fertile shores of Botany Bay, ere they were removed to another harbour, lying about seven miles further north, beautifully situate, and fulfilling every requirement, which they named Port Jackson.

The first free settlers did not make their appearance till 1794. The officers of the garrison were merchants also, and trafficked in whatever merchandise they could find. Rum especially was a chief article. A Government regulation required every ship which should put into Port Jackson, to deliver a certain proportion of her spirits to the officers according to their rank!! They also received a list of the merchandise brought by each ship, from which they selected whatever seemed most profitable, which they disposed of again at retail to the soldiers, settlers, and convicts at an immense profit. Further, the officers enjoyed the entire monopoly of importing spirits, as also the exclusive privilege of selling them to the retail merchants. By these devices many of them amassed considerable fortunes by trade, and thus the repeated efforts made by a succession of Governors to effect a reform in the colony were rendered fruitless. During the administration of Captain Bligh, so widely known in connection with the tragic fate of the mutineers of the *Bounty*, rum was the most valuable article of exchange, and the colonists found by bitter experience that there were no other sellers of this destructive drink than the privileged few.

The utmost anarchy and violence reigned supreme through-

out New South Wales at that period; the power of the Government was set entirely at nought, license and violence usurped the place of law and order; the convicts found they were not under any effective control or supervision; whole bands of them infested the country as "bush-rangers," till they grew so bold as to enter the dwellings of peaceful settlers in broad day, where they perpetrated the most cruel excesses.

In 1807 Mr. McArthur and Captain Abbot of the 102nd introduced the first distilling apparatus into the country for cheapening the production of ardent spirits. The Governor forthwith confiscated the apparatus, and forbade distillation in any part of the colony. This prohibition gave rise among those interested to dissensions, which gradually rose to such a height, that about a year thereafter it led to Bligh being placed in confinement by some of his own officers. The English Government however now began to perceive that such a state of carelessness could no longer be endured, and not only reinstated Bligh, but promoted him to the rank of Admiral.

On their arrival in the colony the prisoners were sent to barracks in Sydney, where the Government selected from their number such handicraftsmen as they required for the public works, while the remainder were distributed as land cultivators, labourers, artisans, &c., among such private individuals as had made themselves agreeable to the Government. As free labour was rare and expensive in the colony at that period, the requests for such allocations of forced labour were greatly in excess of the number of workmen so available.

Those consigned to private individuals were taken into the interior in charge of a constable or overseer, where they were required to build a shelter for themselves, which, owing to the mildness of the climate, could be very speedily accomplished. The hours of work were from 6 A. M. to 6 P. M., and the main feature was that the convict durst not leave his employer, whether kind and good-tempered, or harsh and cruel. When there was no further occasion for their services they were remitted to Government, who found another employer for them.

All landholders in the colony were entitled, on preferring a request to the Governor to that effect, to have assigned them, according to the current quantity of disposable labour, in the proportion of one workman to every 320 acres of land; but no settler, no matter how extensive his holding, could "take on" more than 75 convicts. Each employer had to engage to keep the convict assigned him one month at least, and provide, at his own cost, food and clothing according to a scale fixed by Government.

The weekly rations consisted of nine lbs. wheaten flour, or at the option of the employer, three lbs. Indian corn, and seven lbs. of wheat flour, seven lbs. of beef or mutton, four lbs. salt pork, two oz. salt, two oz. soap. The clothing consisted of two jackets annually, three shirts of canvas or cotton, two pairs of drawers, three pairs of shoes of stout leather, and a hat or cap. Each labourer was also allowed the use of a counterpane and mattress, which however remained the property of the employer. These legal privileges

had however been extended through custom or the favour of the employers to various little articles of luxury, such as tobacco, sugar, tea, grog, &c. In particular, with the object of ensuring the utmost zeal on the part of the workman during the harvest season, it was almost imperative at that season to show him those little relaxations and favours which at length became customary, and in no slight degree enhanced the cost of his maintenance.

On the arrival of a convict ship a crowd used to hurry down to await the moment when the convicts were to be allotted to applicants. As no special memoranda were made during the voyage of the offence for which each man had been transported, or his subsequent conduct on the voyage, the administration were not in a position to make such a selection as should classify the prisoners, and assign them according to nature of crime and subsequent behaviour to a determined or a more gentle employer. Hence resulted the most lamentable injustice; the most truculent of these men occasionally were assigned to the gentle masters, while a less hardened criminal came under the yoke of a hard-hearted task-master, and thus had an infinitely more severe lot to bewail than he in fact deserved.

Such a harsh, and in too many cases unjust, method of dealing with them, drove the convicts to the commission of fresh offences, or even crimes, and, in desperation at the wrongs to which they were exposed, they not merely neglected utterly the interests of their temporary masters, but

in many cases, impelled by a fierce thirst for vengeance, they burned house and property over his head at the harvest time!

The chronic alarm and anxiety of the colony during a long period was not however traceable to the principle of the system itself, but to the method in which it was worked by self-seeking natives, greedy of gain. No sooner had the most glaring of the evils been rectified, and by means of a powerful government law and order resumed their wonted sway, ere the young colony began to make most unexpected strides in developing its capabilities, and both in the unfolding of its natural resources and in its trade and commerce ere long attracted the attention, not merely of England and her manufacturers, but of all Europe.

In 1840 New South Wales ceased to be a convict settlement, at which period there were 130,856 souls in the colony, 26,967 of whom were convicts. In 1857, when the last census was taken, there were in all 305,487, of whom 171,673 were males, and 133,814 females, who inhabited 41,479 houses, 1725 huts, 50 waggons, and 75 ships, and subsisted chiefly by pasture and agriculture.

The morality of this population diffused over 321,579 square miles has greatly improved, thanks to the unlimited freedom of individual power to develope itself, and the opportunities afforded for leading an independent, comfortable life, and in the interests of Truth we must add, that in no part of Europe would any one be left so unfettered to travel

about alone and unarmed, or require less precautions, as in this once penal colony.

The number of criminal cases of all sorts in the colony during the last ten years, during which the population has increased from 189,600 to 266,189, is as follows:—

1848	...	445	accused,	of whom	were executed	4
1849	...	534	—	—	—	4
1850	...	555	—	—	—	4
1851	...	574	—	—	—	2
1852	...	527	—	—	—	5
1853	...	604	—	—	—	2
1854	...	637	—	—	—	6
1855	...	526	—	(one of these a woman)		5
1856	...	461	—	—	—	0
1857	...	395	—	—	—	4

One must not forget to take into account that by far the larger portion of the population are recruited from the lower class, as measured by education. On the whole we may assume that of the 305,487 souls, 30,000 men and 20,000 women *can neither read nor write.*

As to the intimate connection between crime and ignorance, most striking confirmation is obtained from investigations made in England and Wales in 1842-44, in the case of 69,616 criminals, of whom 21,799 or 31.3 per cent. could neither read nor write, 41,620 or 59.8 per cent. could read and write imperfectly, 5909 or 8.5 per cent. could read and write well, and only 308 or 0.4 per cent. had received a good education.

The present population of New South Wales, despite all

their burdens and difficulties, furnish an instructive and cheering example of what may be made of even hordes of fallen man under certain conditions, if they can be afforded the opportunity of working and showing their powers.

Confined in gloomy cells between high walls, chained hand and foot with heavy iron fetters, condemned in their wretched state to life-long inaction, the convicts sent out to Botany Bay during fifty years would have cost the State directly, and society indirectly, an enormous sum; while their existence would have passed in silent brooding over their fate, and speculations as to the means of avenging themselves on mankind.

Placed on a remote, healthy, fertile shore, with the cheering prospect of inaugurating for themselves a new era of existence by labour and industry, and thus being enabled to attain competency and respectability, these very same men raise themselves, at but little cost, to the position of valuable subjects to the state and to society, by causing to smile, under the gold crop of agriculture, lands hitherto all but unknown, and thus becoming the founders of a community, which bears within itself the germ of such a marvellous development in the future, that political seers even now designate it as "THE GREAT BRITAIN OF THE SOUTHERN HEMISPHERE."

A system which, despite the many serious deficiencies caused by individual selfish short-sightedness, has produced such results, cannot be considered by any unprejudiced inquirer as altogether objectionable or aimless;—on the contrary, it seems to us it has proved its utility in founding new over-

sea colonies in portions of the earth as yet little visited, the first colonization of which is attended with local difficulties. We have but to avail ourselves of the experience acquired at Botany Bay, avoiding the canker under which the system has hitherto been worked in the British colonies (with the exception perhaps of that pattern convict settlement at Singapore, which we have already described), and draw up such regulations, keeping in view the sole object of transportation, viz. PUNISHMENT BY EXILE, AND REFORMATION OF THE INDIVIDUAL THROUGH LABOUR, as shall facilitate its being carried out in an efficient manner, and suffer ourselves neither to be diverted from our course by the selfish warnings of interested administrators, nor by the objections of ill-advised philanthropists.

With respect to the carrying out of a system of transportation, such as formerly existed in the British colonies, especially Australia and Van Diemen's Land, the following modifications seem to be advisable :—

1. The abandonment of the convict to the employer, i. e. the "assignment system," must be entirely given up, as the prisoner by such an arrangement degenerates into an article for speculation, out of which it must be the task-master's interest to get as much as he can, so as to be able to return him upon the hands of the State so soon as his capacity for labour begins to fail. The convicts who were thus "assigned" in New South Wales, stood to their employers in the same position as negro slaves in the Southern States of

North America, or the island of Cuba. They were fed like beasts of burden, without the slightest remuneration for the heaviest work. The State had, it is true, a right to punish the criminal, but it seems to us unjust in the extreme to make him the slave of his fellow-man. Accordingly this practice was the source of unutterable mischief, and was followed by most deplorable results as regards the moral development of the colony.

2. The case is very different when the labour of the criminal, instead of being devoted to the aggrandizement of a private individual, finds its expansion in forwarding parochial or national public works, in clearing and cultivating tracts of land, and preparing them for the future labour of free colonists, in the laying out of roads, in the erection of churches, schools, hospitals, and barracks, in the construction of docks, quays, &c. &c. So soon as private interest disappears,—so soon as the energies of the criminal are no longer made available to put money in the pockets of private speculators, but are utilized for the general good, by far the greater number of those minor drawbacks will disappear, which press with all the more force on the compulsory labourer, in proportion as he feels conscious that he is regarded by him who has purchased his labour not as a FELLOW-MAN, but as a CHATTEL, to be employed while he is of any value, and then to be cast aside, as one might throw a dried twig into the fire. What may be accomplished in this direction, even in colonies of comparatively recent foundation, is evi-

denced by the splendid roads of Cape Colony, traversing mountain passes 6000 to 8000 feet high, the numerous public buildings in Singapore, Hong-kong, Sydney, &c. Edifices, which in consequence of the high price of free labour, might not have been erected under the lapse of many years, actually at present rear their imposing forms like so many ornamental memorials, now of the worship of the loving Saviour, now of our charitable duties to the sick and afflicted, but all serving to instruct and civilize the rising generation!

3. As to the subsistence of the criminals, we do not believe that the principle of giving them the same descriptions of rations, no matter whether they worked much or little, would be found conducive to the attainment of the great object of making them feel an interest in their labour. We would rather see the present system departed from in this particular, and a marked difference made in the food provided for the industrious, as compared with their more indolent companions.

4. Of great importance in penal colonies, as tending to produce a lasting and decided improvement of the individual, is the FAMILY TIE. What is independence or even affluence to the exile, if he has no one to care for, or think of, but himself? His slow and laborious earnings would greatly tend to plunge him once more into excesses, till he quickly sank back into his former state of war with civilization.

5. It seems to us imperatively necessary in the interests of this great design of a penal colony, that provision should be

male for a certain proportion of female population, which might consist partly of female criminals, and partly of the wives of such of the male criminals as should, after a sufficient probation, be permitted to have their wives and children conveyed at the cost of Government to their place of exile. Lastly, the nucleus of a female population thus already formed might be added to from time to time, by sending out such discharged female criminals as had no visible means of making an honest livelihood in the mother country. It were a noble object for Christian activity and religious harmony to provide the means for sending these wretched outcasts to the new home that was thus being formed.

6. The importation of spirituous liquors, that fruitful cause of so much crime, must be confined within the narrowest limits. One cannot believe that even in unhealthy places, where the water frequently is very impure and unhealthy, owing to vegetable matters held in solution, the use of strong spirituous liquors must needs be unavoidable. Tea and coffee will in such places, as I experienced myself during several years' residence in unhealthy climates, be found excellent substitutes.

7. No official of the colony, civil or military, should be permitted to trade in any article except the natural products of the soil. On the other hand, it would be advisable that each *employé* should have assigned him by Government, a tract of land for cultivation corresponding to his rank.

There can be little doubt, and it may well be advanced as

an argument on the other side, when the rapid progress made by the Australian colonies under the influence of this transportation system is adduced as an example in point, that nowhere probably on the earth would external circumstances, position of the country, and development of the colony to such a pitch of prosperity, combine so wonderfully to produce such a result, as was the case with New South Wales. But even the clumsy method of carrying out this form of punishment, and the immense use made of it for selfish ends by men who had every opportunity for studying close at hand the influence it might have been made to exercise upon the development of the Australian colonies, could not weaken the conviction that, under more judicious management, it would have answered every anticipation that could reasonably be formed of any mode of punishment, and that it is better calculated than any other to prove conducive to the amelioration of the criminal himself. We might, while upon this subject, specially refer to the valuable and comprehensive work of Dr. Holtzendorf upon transportation as a means of punishment,* which embraces all that can be said on either side of the question, all put together in an attractive and exhaustive manner, and who, contemplating the great example presented to the world by Australia, has arrived at a similar conclusion, "that the working power of the criminal may,

* Die Deportation als Strafmittel in alter und neuer Zeit, und die Verbrecher-Colonien der Engländer und Franzosen in ihrer geschichtlichen Entwickelung und criminal-politischen Bedeutung. Dargestellt von Franz v. Holtzendorf, &c. Leipzig, A. Barth. 1859.

under proper management, be made to produce results, able to accelerate the progress of a generation, while furnishing at the same time a lever by which to effect a moral reformation in the disposition of criminals." He foresees the time "when the colonists of New South Wales and Van Diemen's Land need no longer feel ashamed at the historic recollection of their original convict associations, but might rather, viewing the prosperity of their country, and the tone and extent of their civilization, feel grateful to the criminals who landed in 1788 to become the pioneers of the country, and do them the justice of believing that the good which they were compelled to do to the soil still existed, while the evil they might have done was left undone of their own accord, or was gradually assimilated under substantial progress."

The greatest obstacle to be encountered by the transportation system will be found in the difficulty of hitting upon suitable localities. When we consider the many conditions which must be satisfied, some referring to the general objects aimed at in all punishment, some to considerations of humanity and utility, when selecting a site for a penal colony, such as climate, soil, distance, importance of the country as a market for the products of the mother country, &c., it will be found that the number of unclaimed or unbespoken territories, in which a scheme of compulsory colonization could be carried out on a large scale, is exceedingly limited.

For Germany, however, at least under her present political composition, the foundation of penal colonies over-sea seems

all but entirely impracticable. She must, in the first place, have her maritime power more developed. On this subject the agreement is of importance which was entered into in 1836 between Mr. James Colquhon, Consul-General for the city of Hamburg, and the agents of the Australian Agricultural Society on the other, as, although nothing resulted from it, it nevertheless indicates how States that have no colonies can set about the system of transportation. The gist of that scheme was the subscription of a sum for the passage of such convicts as voluntarily accepted the offer, on their engaging to remain for a certain period at compulsory labour in Australia on the same terms as those of English convicts.*

Once the wish and the necessity shall arise in Germany, owing to the expansion of her population, for possessions beyond sea, and her navy shall increase on a scale adapted to their protection and defence, then, although the choice of locality may be limited, the idea will no longer remain impracticable. In the Indian Ocean as well as the Pacific there are numbers of island groups, which, by their hypsometric conditions, geographical position, and fertility of soil, are admirably suited for settlement by white labour. The prejudice against the climatic adaptability of the majority of these falls to the ground, when we recollect what entirely altered conditions in that respect have been brought about by the industry and energy of the colonists of Singapore and Pulo-Penang, on islands which, from being in the worst pos-

* The cost of transport of each convict was to be reckoned at £18.

sible repute for their deadly climate and dreaded forest malaria, are now favourite invalid resorts of the wealthy white residents of the islands of Eastern Asia. But German statesmen must no longer hesitate, or continue to sacrifice the future to the exigencies, even the most pressing in political eyes, of the present, for England noiselessly but systematically is possessing herself one after the other of all the islands that are as yet untenanted by the white man, as, for instance, quite lately of the Andaman Islands in the Bay of Bengal, or, as in the case of the Feejee Islands,* accept a suspicious protectorate got up by an influential missionary; while the Emperor of the French, with his irresistible inclination for annexation, is incessantly occupied in seizing on points important either by geographical position or for trade purposes, of which New Caledonia furnishes the latest example. Too long delay and expectation may have for the contemplative German results similar to those which in

* This Archipelago, remarkable by the size and loftiness of its islands, extends from Batoa or South Island in the S.E. (19° 47′ S. by 179° 52′ E.), to Thicombea to the N. (15° 47′ S.), and Biva to the W. (176° 50′ E.), and contains 225 islands and islets, of which about 80 are inhabited. The entire superficial area is about 5700 square miles, and upon a superficial estimate it contains 150,000 souls. The climate seems to be eminently suitable for cotton culture, besides which sugar-cane, coffee, tobacco, arrow-root, and most probably rice and indigo, may be advantageously cultivated. Berchthold Seemann, the well-known botanist, who made a scientific exploration of some of the Feejee Islands at the expense of the English Government in the Autumn of 1860, discovered in the valleys of Naona forests of the sago palm, whose nutritious flour might become an important article of export. Dr. Petermann published in the latter half of 1861, at page 67 of his valuable "particulars of certain important recent discoveries in geography," an interesting synopsis of all the latest scientific information respecting the Feejee Archipelago.

Schiller's beautiful poem, punished the dallying of the son of the Muses, whose fate, as compared with the actual political circumstances of Germany, suggests but too many painful analogies!

On 6th December the frigate was made ready for prosecuting her voyage, and the same evening all was ataunto. The following morning we were to be towed out of the many-coved port, till quite clear of "the Heads." The steamer, however, sustained an accident to her machinery, and we had her services little more than half a day. Early on the 7th, a breeze had sprung up from S.W. by S., accompanied by squalls and rain, which gradually freshened into squally weather from the S., and determined the Commodore to make all sail at once. Already, even while we were still in the port, the weather began to be stormy; we had to take in a reef in the mainsail, and by 9 A.M. found ourselves outside of "North Head." By the afternoon the low flat coast of Australia had sunk below the horizon, and the south wind had now become a gale. It seemed as though winds and waves had conspired to put to the severest test the operations of the caulkers, carpenters, and sail-makers of Sydney. But although the frigate rolled tremendously, and the frequent squalls propelled the sea against her hull with frightful violence, she did not ship a drop of water below. The repairs in dock had been most effectually performed. After a couple of days both wind and sea fell, the sun shone out with the mildness of early spring, and we bowled along in the most

delicious weather and with every stitch of canvas set, swiftly careering towards our next goal, New Zealand.

On the 9th at 5 P.M. we buried the corpse of one of the gunners, who had died the same morning of dysentery, the remains being committed to the deep with the customary ceremonies and marks of respect.

On the morning of the 19th we sighted Barrier Island off Cape Butt, distant 35 miles. The more we neared the land, the more balmy did the atmosphere become. Innumerable Albatrosses and *Procellariæ* swarmed around us, and the result of half an hour's shooting from a small boat dropped over the side for the purpose, resulted in our securing eleven different species of storm-birds. A whale about 50 feet in length also came close under our quarter, and only retreated after he had been repeatedly fired upon and had received a number of balls in his carcase.

We steered for the South Point of Barrier Island, the outline of which is very beautiful, relieved as it is by two hills, of which that to the south is about 2000 feet in height, running up into a sharp peak, while the more northerly rises gradually, being only precipitous on the northern face. The broken conical rocks which ascend out of the sea near the northern point of the island unmistakeably indicate their volcanic origin.

Our arrival off New Zealand was signalized by most unusual calms, which indeed materially delayed our entrance into Huraka Gulf, a sort of lateral bay, entering from the har-

bour of Auckland. A bark, which had sailed from Sydney three days before us, had, as we were informed by our pilot, been one day in harbour. We now had to tack slowly up under faint puffs of wind towards the anchorage, which we reached finally at 5.30 P. M. of the 22nd December, 1858.

The country round Auckland has none of those majestic features which are presented by New Zealand further south. The enormous volcanic peaks, such as Mount Egmont, 8000 feet high, have dwindled down in this region to numerous but small extinct cones, rarely rising above 800 feet. Instead of the hills covered with perpetual snow of the central island, one sees here only low chains of hills, about 2000 feet high, and a rolling country, which dips into the sea in steep cliffs of sandstone. In the various bays and channels of the wide gulf might be seen numbers of natives in their elegant canoes engaged in fishing. We found but five ships in harbour, and here also the *Novara* was the largest man-of-war that had ever entered the port. The population of Auckland turned out on the beach as we approached, and began to exchange the usual salutes with the little fort.

XIX.

Auckland.

Stay from 22nd December, 1858, to 8th January, 1859.

Request preferred by the Colonial Government to have the coal-fields of the Drury District thoroughly examined by the geologists of the *Novara*.—Geographical remarks concerning New Zealand.—Auckland.—The Aborigines or Maori.—A Mass meeting.—Maori legends.—Manners and customs of the Aborigines.—The Meri-Meri.—Most important of the vegetable esculents of the Aborigines before the arrival of the Europeans.—Dr. Thomson's anthropological investigations.—Maori proverbs and poetry.—The present war and its origin.—The Maori king.—Decay of the native population and its supposed causes.—Advantages held out by New Zealand to European emigration.—Excursion to the Waiatarna valley.—Maori village of Oraki.—Kauri forests in the Manukau range.—Mr. Smith's farm in Titarangi.—St. John's College.—Intellectual activity in Auckland.—New Zealand silk.—Excursion to the coal-fields of the Drury and Hunua Districts.—New Year's Eve at the Antipodes.—Dr. Hochstetter remains in New Zealand.—The Catholic mission in Auckland.—Two Maories take service as seamen on board the *Novara*.—Departure.—The results of the explorations of the geologist during his stay at the island.—Crossing the meridian of 180° from West to East.—The same day reckoned twice.—The sight of the islands of Tahiti and Eimeo.—Arrival in the harbour of Papeete.

Great was the interest excited at the Antipodes by the arrival of the *Novara*, for besides the importance for Eu-

ropean emigration of a country possessing a healthy climate, a fertile soil, and but thinly peopled, it was most gratifying to the members of the first Austrian Expedition to see much hitherto unsuspected natural wealth made known to the inhabitants by one of their scientific staff, and thus to prove of use to a nation which in almost every part of the globe has so incontestably borne away the palm in advancing the interests of science and the development of the treasures of the earth.

Immediately after our arrival in Auckland, the Governor of the colony, Colonel Gore Browne, renewed the request, previously made in his name to our Commodore while at Sydney by Sir William Denison, that he would permit our geologist to make a proper scientific examination of a portion of the Drury District, in which there were certain indications supposing to point to the existence of coal-fields. Upon his report would depend the exploration and the establishing of a regular system of working the mines. The little Expedition to the coal-fields, which was most munificently equipped by the Government, proved successful beyond all expectation, so much so as to induce the Governor to beg of our Commodore the further favour of permitting our geologist to make a still longer stay on the island, for the purpose of more accurately and completely surveying the dependency. The negotiations upon this subject, fraught with such happy results for both parties, will be found in the Appendix, while

at the end of this chapter we shall give a succinct sketch of what was accomplished in the interests of science by the activity of Dr. Hochstetter, our geologist, during his stay in New Zealand, the more copious details of his eight months' stay at the Antipodes being reserved for a special volume.

New Zealand consists of two large islands separated from each other by Cook's Straits, a splendid channel, 150 miles long by 50 in width, and the two smaller islands, called Stewart's and Chatham Islands, about 50 by 20, separated by Foveau Straits, the latter lying in the ocean about 400 miles south-west of the province of Canterbury.

The entire group extends from 34° to 48° S., and 166° to 179° E. The greatest extent of land, from N.E. to S.W., i. e. from Cape Maria Van Diemen to South Cape, is over 1000 miles. The greatest breadth, along the parallel of 38° S. is about 200 miles, while the coast-line is several thousand miles in extent. By the constitution of 1853, New Zealand is divided into six chief provinces:—Auckland, New Plymouth (Taranaki), and Wellington in the north island, and Nelson, Canterbury, and Otago, in the central islands, since which period two new provinces have been added,—Hawk Bay in the north island, and Marlborough in the middle island.

None of the remaining seven, however, is so important or possesses such geographical advantages as Auckland. Its coast-line is upwards of 900 nautical miles, while its more

important rivers, such as the Waikato, Waipa, Waihó (called also the Thames), Piako, and Wairao, are navigable for small boats far into the interior. Of its 28 harbours, four, viz. Bay of Islands, Auckland, Wangaroa, and Middle Harbour, are accessible throughout the year for large ships, besides offering secure anchorage; but of the remainder only eight will admit vessels of 400 tons, while the balance can only be used by small brigs and schooners.

Auckland, the capital, lies on an isthmus about six miles in width, dividing Waitemata Harbour from that of Manukau, the first being beyond all question the best harbour on the east side, the former on the west. These two harbours furnish moreover, by the numerous streams and creaks that disembogue into them, most excellent means of communication with the interior. The products of the country through a region of 100 miles are conveyed to Waitemata by the Waihó and Piako rivers, while on the other hand the Waikato and Waipa rivers bring to the harbour of Manukau the natural products from 120 miles inland. At a comparatively small cost a cut might be carried through the isthmus, at a point where it is only a mile and a half wide, and direct water communication be thus effected between the two harbours, to the manifest advantage of the country and capital. At present the mail-steamer, which comes from Sydney once a month with the European letters, berths in Manukau Harbour, near Onehunga, on account of the greater convenience of that harbour, and its being at a much less distance, whence

the mails are transported in coaches across the isthmus to Auckland. Onehunga is a flourishing settlement, with interesting volcanic formations. The road thither lies through a fertile rolling country, which is, for the most part, reclaimed and under cultivation, or else depastured by large herds of handsome, powerful oxen. The three land-marks of the landscape are:—Three King's Hill, Mount Eden, and One Tree Hill. All these, of moderate elevation, were formerly crowned with *pahs* or native fortified villages, and were once inhabited by a large population, as is evidenced to this day by the quantities of human bones found in the lava below, and by several singular terrace-like artificial earth-works. The cottages of the settlers are handsome and clean, but of singularly small dimensions, very much the result we suppose of the dearness of building material and the high price of labour near Auckland.

According to the census of 1857 the entire population of New Zealand amounted to 108,204,* the white European population numbering 52,155, of whom 16,315 persons inhabited Auckland (9038 men, and 7277 women).

The aborigines (Maori in the native tongue) are officially returned at 56,049, of whom by far the larger number, above 38,000, inhabit the province of Auckland. Of all the savage races with whom England has come in contact in the course of

* We are indebted to C. W. Stafford, Esq., Under Secretary of State to the Colonial Government, for copies of the latest statistical documents, from which we learn *inter alia* that at the end of 1859 the population amounted to 129,392, the aborigines numbering 56,049, and the foreigners 73,343.

her mighty struggles to open trade and raise humanity, the New Zealanders have hitherto proved themselves to be the most susceptible of European civilization. More than five-sixths of their number are already Christians, and have been baptized, and, settled down in comfortable residences, maintain themselves by agriculture or sailoring. More than one hundred vessels built in the colony are owned by natives, who not alone have in their hands a considerable portion of the coasting trade, but carry on business with the adjoining islands, as also with New South Wales. While Bushmen, Hottentots, Caffres, Australian negroes, all, like the Indian tribes of Canada and the United States, present the helpless type of misery and decay, all the indications here seem to promise that the splendid spectacle will be presented of one of the most savage, yet highly gifted, races of the globe being raised in the scale of humanity by education and culture, and brought permanently within the scale of civilization. Whoever has followed with critical eye the immense increase of this colony during the last twenty years, must indulge this cheering anticipation not less confidently than the traveller who has traversed the entire island totally unmolested, has been cordially welcomed in every hut, has encountered everywhere schools and Christian missions, and has seen the natives occupied solely with the avocations of peace. Those native chiefs, who from contact with civilization had already adopted the outward deportment and mode of life of the European settlers, omitted no opportunity of confessing in language of

fire the consciousness of their former moral degradation, and of holding the European up for admiration, as the founder of a new era of morality and humanity in their country; nay, one Maori, who is now a zealous missionary in the interior of the island, once avowed to his hearers that he had himself as a boy eaten human flesh, and had first learned through the influence of Christianity to comprehend the abominations and wild-beast ferocity of his previous state, after which he had begun to lead a life more worthy of the dignity of manhood.

The members of our Expedition also enjoyed the opportunity of attending a Mass-meeting of Maories in the Takapuna district on the north shore of Waitemata Harbour, where they gathered, from the orations of the most influential chiefs and speakers, the liveliest conviction of their fidelity and attachment to the Queen of England and her government. We insert here a pretty full description of this remarkable meeting, as well as a brief sketch of the most interesting manners and customs of the aborigines of New Zealand, in order to enlighten the reader as to the justice of the universally expressed distrust of the capacity of the Maori for civilization, and the more readily to form an idea of the alarm and astonishment of the English Government, on being suddenly informed that the entire native population had rose in arms against the European settlers.

A wealthy and much-respected chief, named Patuóni, has been in the habit for many years past of inviting all the friendly tribes residing in his neighbourhood, as well as the

most distinguished of the white settlers, to a great popular fête every Christmas. The intelligence that on the present occasion the "Kavana" (Governor), or Commander of one of Queen Victoria's allies, would attend with a numerous suite, had caused much agreeable excitement among the Maori, and they offered to send some war-canoes and two whale-boats to the coast opposite in order to convey the guests. The staff of the Expedition were however already at the place of meeting in the Takapuna district, when the war-canoes arrived at the usual place of embarkation in Auckland. Here we saw a number of large tents pitched on an eminence, and gaily adorned with English and other flags, under which were very long narrow tables, about two feet high, covered with neat little baskets elegantly woven of the leaves of the New Zealand flax, in which were cooked potatoes, roast-pork, and fish. The guests, 300 or 400 in number, sat on the ground, which was thickly covered with fern freshly gathered, some sitting cross-legged, others squatting on their heels, zealously excavating the food with their fingers, for the use of forks has not yet become a fashion among the Maori. The chief beverage was tea, and all around on the grass adjoining the tent might be seen improvised fire-places, on every one of which a huge kettle of boiling water was singing. The gait and extravagance however of but too many indicated that less harmless drinks were being supplied close by. Each as soon as he had finished his repast lighted his pipe, and mingled with the groups that were chatting about. Tobacco smoking

has become a positive passion with both sexes, and even among the children of the poorer classes it is no unusual thing to see the infant carried in the arms coolly take the pipe out of its mother's mouth and begin to smoke it! The earthen pipe, broken off so short that there is barely sufficient to enable the teeth to take hold,—in one word, summing up everything to English ears—the "cuttie"—is most in favour.

Scarcely was it rumoured that the Commander of the Austrian frigate with his staff were at hand, ere the whole crowd, which up to that moment had been abandoning itself to enjoyment, suddenly dispersed *pêle-mêle* in wildest confusion. The gay flags were removed from the tent-peaks, and made to veil the scene of uproar; a quick but monotonous song, alternating with measured stamping with the feet, was droned out, the chiefs brandishing aloft and swinging with wild gesticulations their costly clubs (*meri-meri*, literally "Fire of the Gods"), made of primitive rock. Each Maori who had a club beside him swung it with wild gesticulation, while the rest tossed in the air the ends of their woollen garments. In order to give us a more complete idea of their ancient customs, a war-dance succeeded to this, in which men, women, and children took a part. Although this is nothing but a confused advance and retreat of two bodies of people arranged opposite each other in regular order, who suddenly rush towards each other with impetuous vehemence and loud discordant cries, yet the wild shrieks, the rapid motions of those who took part

in it, the rolling of the eyes, the protrusion of the tongues, combined to make a formidable impression, and to give some idea of the frightful appearance of these warriors, when, instead of simulated rage, they were animated by the ferocity of real warfare with the foe! As soon as symptoms of lassitude and fatigue began to be visible among the war-dancers they arranged themselves, at the command of the old chief, Patuóni, on both sides, three ranks deep, and permitted the strangers to pass from end to end of the camp. Here we were once more welcomed in genuine New Zealand fashion by the various chiefs, some of whom endeavoured to strike up a conversation. Mr. W. Baker, Government interpreter, and Secretary to the Native Department, who had been desired by Government to attend the *Novara* staff to the feast, was so kind as to translate.

The first to emerge from the ranks was Paora Tuhaera of Oraki, who spoke as follows: "Welcome, O chief from a foreign shore, messenger of a king and a nation of which we only lately have heard tell! Our English friends explained to us that your countrymen have long been friends and allies of the British people, whose Queen is our protectress, and under whose laws we live in undisturbed tranquillity on our own lands. You are a stranger among us! You for the first time behold a race whose fathers passed their lives in ignorance, in war, in the practice of every evil custom. You have been present at this place and witnessed how we sought once to give vent to our passions and to scare our enemies. This

spectacle you saw in peace, and no man ventured or even thought of lifting the hand against you! Yet had you come among us at the period of which I spoke, our arm would have been raised to inflict the deadly blow upon you, or your hand, which I have just pressed, would have been striking at me to compass my destruction! You have seen many lands, many perhaps fairer than this island of ours; but here there is nothing to injure us or to make us wish to live in other countries. The laws of England shield us from the hand of the aggressor, we live happy and at peace, and rejoice to welcome those who, like you, come to us on a mission of good will!"

This speech and the two following, the Commodore responded to in English, in terms of warm cordial thanks, and enlarged on the material and intellectual progress of the aborigines, all which was duly translated by Mr. Baker to the Maories.

After this Cruera Patuóni of Awataha, an elder brother of Tamati-Waka-Néni, advanced and said: "Welcome! welcome! The young men have welcomed you, and I, an old man, a friend of the Europeans from the earliest days in which they planted foot in New Zealand, I also bid you welcome! What can I say more? You have heard what we were, —you see now what we are! It needs not that I should add to what has been said by those who spoke before me. Welcome then to the land of the Maories, friends of the white man."

After several more of the younger chiefs had greeted the Commodore and staff in the most hearty manner, Hui Haupapa, of colossal stature and frank expression of countenance, made with his powerful arm a passage for himself through the compact crowd, placed himself in a somewhat theatrical position, and began in a loud voice, and in evident excitement, brandishing his meri-meri as he spoke:—

"The chiefs of this neighbourhood have welcomed thee. My tribe lives far from here, but *I* am here, and I bid thee welcome! Thou hast said we are happy and live at peace. It is true the laws of our Queen have contributed to this fortunate state of things. Formerly, war, murder, and spilling of blood formed our chief occupation. Even now troubles arise, which it is often difficult to smooth over. Just as thou wert landing we were engaged reading a letter informing us that a dispute of long standing between the Ngatiwhatua and the Uriohare threatened to give rise to a war. Were we still in our old Maori state we should assuredly have had recourse to arms for its settlement, but the two tribes will remember that the laws do not permit one family of our Queen's children to make war against another, and they will therefore restrain their anger in the hope that their differences may be amicably arranged. But what interest have these things for you? You came to us in peace and friendliness, take with you the love of the entire assembly, which is proud of having been visited by an officer of the great king, who is a friend of Queen Victoria and her children."

The natives, who were standing closely packed on either side, and listened in breathless silence, expressed their acquiescence by head and hand at the end of each oration. The manner in which they are accustomed to express themselves at these assemblies is quite unique. The speaker plants himself at a distance of about ten steps from his audience, whom he gradually approaches in his speech till within three feet, when he turns round in silence, resumes his former distance, and begins anew. This custom has several advantages; it gives the orator time to collect his thoughts, while his eloquence has time to sink into the heart of his hearers. Each speaker advances his opinions and sentiments with singular calmness and dignity. Only at certain "points," which seem to him to be of importance, does the orator throw up his right hand, while on his left arm, hanging by his side, lies his stone club, without which no chief would think of addressing a meeting.

During these speeches we had drawn near the groups surrounding us. The majority were dressed in European clothes, the chiefs usually wearing a black cap with gold band, the rest in the most various costumes, apparently as accident or caprice had dictated their choice. The old men were tattooed more or less, according to their rank, strongly contrasting with their European habiliments. The elder women, except that they were bare-footed, were mostly clad in European dress, some even in elegant silks and muslins, and had their lips and chins tattooed, whereas the young folk

of both sexes no longer followed that custom, and hence we frequently had occasion to remark exceedingly agreeable features. Only a very small number of aborigines seemed to be contented with their own national dress, and wore either the universal blanket, or else the Cacahu, a handsome kind of cloak, very artistically made by the Maori women from the fibres of the New Zealand flax. All had the flaps of their ears pierced, and a piece of oval-shaped rock passed through the orifice, or were adorned with shark's teeth, which are usually made fast to a narrow black-silk ribbon. As we inspected some of these groups, and especially were admiring their splendid figures, we came upon two individuals who had hid their heads under their blankets, and were weeping bitterly. To our inquiry as to the cause of their uncontrollable grief amid such a festive gathering, we were told that they were two relatives who had long been separated, and were thus celebrating their meeting again. Friends and relations usually express their joy at seeing each other again by sitting for hours together, according to their friendship or esteem, rubbing noses and sobbing bitterly, and weeping over each other the while! If unobserved this will go on with uncovered head; otherwise they will draw a blanket over themselves. Kissing and hand-shaking have only become a fashion among the New Zealanders since their more intimate intercourse with Europeans.

As we withdrew from this singular never-to-be-forgotten people's festival, and were on our way to our boats, the en-

tire merry multitude assembled on the slope in front of the tents, and to show, it may be supposed, that they were not unacquainted with the usages of other countries, gave, with genuine English good-will, three rousing hurrahs in honour of the departing guests!

The study of the language and history of the traditions, habits, and morals of the aborigines of New Zealand, must necessarily be of special interest on account of our presumed acquaintance with the race they are descended from, and the important conclusions thence deducible as to the settlement of Polynesia at large.

A Maori legend relates that their first progenitors came in seven canoes from the island of Hawaiki (i. e. cradle of the race), one of the Sandwich Islands, 4000 miles to the N.E. of New Zealand.* These canoes had outriggers to prevent foundering, and were called Amatiatia, whereas those they now use, which are also of very simple construction, are named Wakka, and have evidently borrowed their form from the dried seed of the New Zealand honey-suckle (*Rewarewa*). The first canoe that came from Hawaiki was named Arawa. It brought over Honmaitawiti, Tamakekapua, Toi, Maka, Hei, Jhenga, Tauninihi, Rongokako, and others, and these were the first settlers from whom the New Zealanders are descended.

* According to the tradition handed down from the chief Te-heŭ-heŭ, their forefathers emigrated first from Hawaiki-Tawiti-Nui, to Hawaiki-Patata, where they sojourned some time, and thence went to Hawaiki-Ki-te-Maiteŭ, whence they came to New Zealand.

One of the earlier authors respecting these isles of the Antipodes, Richard Taylor, the missionary, relates that in 1840 there was living in the village of Para-para, on the road from Kaitaia to Doubtless Bay, an aged New Zealand chief named Hahakai, who was thoroughly conversant with the history of his native land, and used to enumerate twenty-six generations since the first arrival on the island of the ancestors of his tribe. Taylor is of opinion, however, that a number of these generations must be considered as divinities, and that hardly more than fifteen generations or five hundred years can have elapsed since the first vagrants from the north settled in New Zealand.* At that period they knew neither the custom of Taboo (the sanctity and inviolability of all things) nor cannibalism, both of which customs they first began to practise in their adopted country. As the aborigines before the arrival of the Europeans possessed no written language, these traditions were usually handed down from father to son, while one or more relatives of the more influential families of each tribe were duly set apart to study

* According to Dr. Thomson ("The story of New Zealand past and present, savage and civilized." London. John Murray, 1859), who lived eleven years at Auckland prosecuting his duties as a surgeon in the army, the Maori came to New Zealand, passing by Rarotonga, from Sawaii, the largest of the Navigators' Islands, about the year 1419. This opinion, which is not devoid of probability, is not however incompatible with the Sandwich Islands being the original cradle of the New Zealanders, and Sawaii only a sort of intermediate station. (See United States Exploring Expedition 1838-42. Ethnography or Philology, vol. vii., by Horatio Hale, Philadelphia. Lea and Blanchard, 1846.—The Traditionary Migrations of the New Zealanders and the Maori Legends (*Die Wundersagen der Neu-Seeländer und der Maori Mythos*), by C. Schirren. Riga. N. Kymmel, 1856.)

their traditions, as well as their laws (*tikanga*) and religious ceremonies. The persons thus educated supplied for them the place of annals, books of laws, or written precedents.

Both Taylor and Dieffenbach incline to the opinion of older authors respecting these twin islands, namely, that at the period when these immigrants from the north arrived there, they were inhabited by another dark race of a different descent. Against this hypothesis, however, there is to be urged that not the slightest vestige of any such race can be produced, in addition to which there is but one language spoken throughout the extent of the islands, with dialects few in number and hardly differing from each other. In none of the many Maori legends is any mention made, either express or implied, of any such circumstance, which one would think would hardly have been passed over in silence, had the islands at the first landing of the emigrants from Hawaiki been inhabited by another race. The great disparity in physical frame between individuals, recalling now the Malay, now the Chinese type, and even the African and Jewish as well, is much more probably explained by the intermixture of the New Zealanders with the inhabitants of the various island groups, which they visited at the period of their migration.

The Maories are on the whole a handsome race of men, well-built and powerful, generally not less in stature than the Europeans, whom they resemble somewhat in their complexion, which gives the idea rather of being embrowned

than naturally brown, by their thin, weak hair, sometimes black, sometimes of a chesnut brown, and whom they closely approach in their features. Indeed full-blood Maories sometimes have such a European aspect, that even the numberless tattoo marks upon their faces do not destroy the impression, but have rather the appearance of those "painted faces" we are accustomed to see in actors, when they wish to give their countenances a more effective cast upon the boards.

The custom of tattooing, or "Moko," is one of those most characteristic of this remarkable people, and is worth being described in detail, inasmuch as it has been almost entirely discontinued since the diffusion of Christianity, for, according to the sentiments of the missionaries, every native, henceforth, who submits to this operation is held to have renounced Christianity, and to have openly dubbed himself a heathen. It has been suggested as the most probable explanation of the rapid spread of this painful practice, that the "Moko" imparts to the countenance a sterner expression in presence of the enemy, and that the Maori women attach more importance to the caresses of a tattooed man than of one whose visage is unmarked. Possibly tattooing was a symbol of puberty in both sexes, and a token of their being of marriageable age.

At first they contented themselves with marking the face with certain straight lines, called by the natives Moko-Kuri, which was the stage it had attained when Cook visited these islands. The present complicated system of tattooing was

first introduced by one of the tribes of the east coast by a certain Mataora, and the first man whose face was thus tattooed was named Onetunga.

Usually this painful operation is performed by a priest (*Tohunga*), who paints, or rather sketches out, one of the many different models with black colouring matter upon the face of the person to be tattooed, having first obtained his opinion, by showing him his visage reflected in a tub-full of water for lack of a mirror. As soon as the latter has signified his assent to the design selected, the further process is begun.

The instruments used were the following :—

The "Uhi," a small piece of wood, one extremity of which is armed with a small piece of sharp-edged bone, set in a vertical direction. This needle-like tool, which was formerly made either of human bones or of those of the albatross, has been since supplanted by proper steel instruments.

The "Ta" or "Tuki," a stalk of fern, which is pressed upon the Uhi in order that it might enter the skin, and bring out the desired pattern.

The necessary colouring stuff (*Ngarahu*) is made from the soot of the wood, when burnt, of the Kauri fir (*Dammara Australis*), which is collected in the leaves of the Ti-reed (*Cordyline Australis*), and is prepared with an infusion of the bark of the Hináu (*Elæocarpus Hinau*), in the form of small cones.

Immediately before the tattooing begins, the colouring matter thus prepared is moistened with the juice of the fruit of Tupa-kihi (*Coriaria Sarnentosa*). The complete "Moko"

comprises the face, the hips, and the upper surface of the thigh as far as the knee. Every separate tattooing has its appropriate name and its special position. Dieffenbach counts 17, and Richmond Taylor 19 of these, distinguishable by their several markings.

The operation is of so severe a nature, that very frequently it cannot be completed without endangering the life of the individual. Only one instance is on record, in which a native sat out the whole formidable process at one sitting, and he died just as the last line was finished. Usually the first tattooing took place at the 18th year, and was continued at various intervals. During the process, the patient lies on the ground with his head reposing on the bosom of the *Tohunga*, who holds the "Uhi" in his left hand, and the "Ta" or "Tuki" in his right, which he strikes upon the former with a rapid constant motion. As soon as an incision is made, the blood is wiped off with a piece of fine flax, and the colouring matter rubbed in. While this is going on the priests and the friends standing by keep up a continual chant, in order to cheer the patient and stimulate his courage.

After the operation the face swells, and for some time presents a downright hideous appearance, and instances have occurred in which it has been permanently distorted. Usually, however, the wounds heal after ten or twelve days, when the incised lines made by the "Uhi" present a bluish-black appearance.

With the women the operation is much more simple, being

confined to one or two vertical or horizontal lines upon the lip and chin. This tattooing occasionally, however, takes place twice, in order to bring out a black colour, as the New Zealanders consider a black lip as the very ideal of beauty. It also figures as such in the songs chanted by the Tohunga on such occasions, of which the following stanzas may be presented as a specimen:—

Be ready, my daughter, to have thyself marked,
To tattoo thy chin!
That, when thou crossest the threshold of a strange house,
They may not say, "Whence cometh this ugly woman?"

Be ready, my daughter, to have thyself marked,
To tattoo thy chin!
That thou mayst have a comely aspect,
That when thou art bidden to a feast,
They may not ask, "Whence cometh this *red-lipped* woman?"

To make thyself beautiful
Come and be tattooed!
That when thou dost enter the circle of dancers,
They may not ask, "Whence cometh this woman with the ugly lips?"

The Tohunga is usually well remunerated, and frequently in the course of his chant makes allusion to the amount of reward he expects, and indeed sometimes stimulates the generosity of his patient by singing amongst other ditties, something like

"The man who is paid well
Tattoos beautifully!
The man who receives nothing
Does not tattoo well!"

The marks, when completely brought out, are so manifold and various that hardly any two New Zealanders are to be found who are tattooed entirely alike. Accordingly these markings serve neither to indicate variety of tribe, nor difference of rank. A slave, if he possess the means, may have his face tattooed with the same ornaments as his master. However it appears, as we were informed by Colonel Browne, that on the occasion of the chiefs ratifying the treaty with the English, they superscribed the various documents with the lines upon their faces, like so much heraldic blazonry, instead of writing their names.

Another remarkable custom of the Maori consists in the right of the priest to declare certain persons and things *taboo*, that is, consecrated and inviolable. This custom, which is nothing else than a religious ordinance instituted for political purposes, is frequently most beneficial in its consequences. So great and universal was the respect paid to the law of *taboo*, that even hostile tribes were in the habit during war of leaving unharmed all persons and things thus protected. A plot of ground planted with esculents, a fruit tree, a sick person, a "lady in the straw,"—all these were so many objects declared holy and inviolate.

Formerly polygamy was tolerably frequent among the Maori, although instances were by no means rare in which a man had but one wife to whom he continued faithful. At present this custom, incompatible with the Christian notion

of the family tie, is confined to those few chiefs who are still heathens.

Usually the young men and girls marry very young. English travellers state they have seen a mother only 11 years of age! Usually the first wife of a young chief is much older than himself, but, on the other hand, instances were frequent of old men marrying young girls. The daughters of men of very high rank frequently remained unmarried.

The mortality among infants under a year old is very great. At present not more than three children are reckoned to each family, and the number of barren marriages is much greater than those that prove fruitful.

Infanticide is at present as rare as in Europe. In former times, especially during the wars of the interior, it was by no means unusual for a mother to put her children to death, especially if females, in order to spare herself the trouble of nursing and bringing up. Male offspring, on the contrary, were taken more care of, because they would increase the aggressive power of the tribe, and were looked upon as the avengers of injuries sustained and not yet compensated. Illegitimate children they almost always put to death, either by strangling them or compressing the mouth and nostrils. The practice of infanticide among the weaker sex took its rise chiefly in the life of slavery which was the normal state of the women during their heathen condition. Such was the reasoning once avowed by a murderess of her

child:—"Why should my child live? to be brought up as the slave of the wives of my husband, to be beaten and kicked by them!"

There seems to be some mistake in the assertion of several writers upon the customs prevalent in New Zealand, to the effect that on the death of a Maori it is customary to sacrifice his nearest relatives. Only when a great chief dies, are some of his slaves occasionally put to death at the same time, that their spirits may accompany him who has preceded them to the shadowy land, to serve him there, and execute his commands as they did while on earth.

So too it occasionally happened that, on the death of a much-esteemed chief, a hostile incursion was made by a number of warriors, in order to provide a victim from another tribe, and thus make it feel the same pang as that which they were suffering in the loss of their chief. Suicide, on the death of a near relative, is even at present far from uncommon as a token of inconsolable grief. A low estimate of the value of life seems to be a leading feature in the character of the New Zealander; it needs but a slight cause to make him take his own life or plunge into some abyss.

Slavery, to the extent that existed among the aborigines in former times, is no longer to be found, though many prisoners taken in war are still held as slaves by their captors. In many cases the slaves prefer to stay with their present masters, if they have been well treated, rather than return among their own race, from whom they feel themselves

estranged, and by whom it is probable they have long been forgotten.

The introduction of Christianity was immediately followed by the manumission of all slaves throughout the islands. Under the old laws, the owner of a slave was undisputed master of his person and property, and might put him to death, or sell him,—in short, do with him as he pleased. Everything that the slave possessed belonged to his master. Slaves were usually made in battle, either during the storming of a fortified village, or *páh*, or during flight before a victorious enemy. Each warrior might take as many prisoners as he could, who thereupon became his incontestable property. Chiefs, however, and youths of rank were usually put to death on the spot.

The offspring of such prisoners of war were also slaves, and equally the property of their masters. However, it frequently happened that a young slave married a girl of the tribe of his conqueror, in which case their offspring were no longer considered as slaves, although they were reputed of low rank. According to the old Maori laws, there were no slaves other than those taken in war and their descendants.

Among the free Maori, there are a number of varying grades; but the principles on which they are bestowed do not seem as yet to have been accurately ascertained by any European observers. Any individual who is able to trace his descent from distinguished parentage of either sex, has the right to assume the title of a chief. As a rule, the elder branch of a

family takes precedence over the younger. The heir-male was always regarded as the head of the family, and in the olden times was its priest or *tohunga.*

The wars of the Maori were chiefly carried on with spears and clubs of various shapes and sizes, but since the arrival of the Europeans the use of fire-arms has become almost universal. Hángi, one of the most renowned and formidable chiefs, who visited England in 1826, on his return exchanged all the splendid presents made him by George IV. for European fire-arms and ammunition, in order the more readily to subjugate all the races on the island by means of these new and dangerous weapons, and make himself omnipotent. Since that period the older warlike implements (*taiaha, paki, ehi*) have only been kept as objects of curiosity for the various chiefs to show.

But the most remarkable weapon of the New Zealanders, which was held by the chiefs in high honour as an emblem of rank, a sceptre so to speak, and which descended from generation to generation, is a piece of nephrite beautifully polished, from 10 to 20 inches long, 4 to 5 inches broad, and half an inch thick, called by the natives Meri-meri, "the fire of the gods," which is pierced at one end, and is usually attached to a cord passed round the hand. In the days of heathenism the Meri-meri was used occasionally as a weapon of defence, as also to scalp prisoners.

The various weapons of nephrite that we had an opportunity of examining were of a pale green colour, which be-

came transparent at the sharp edge, which ran all round, and had a peculiar flame-like glow.

The stone from which these costly weapons are made (the manufacture of which, in consequence of the dearth of suitable instruments before the arrival of the Europeans, was often the work of several generations), is found in loose fragments among the various mountain-streams along the west coast of the central island. The places where they are found in greatest abundance are Arahura and Ohonu on the N.W. coast, beyond Wakatipu, an inland lake, one of the sources of the river Matan, and Piopiotahi, a mountain-torrent on the S.W. coast. At the last-mentioned place, which, although we have little reliable information concerning it, has long been known to seal-hunters, a gigantic block of nephrite, many tons weight, was found in the middle of the current, which owing to its size was valueless, because useless to the aborigines. A sealer, who visited this coast once during a flying visit to Sydney, overheard a remark that this description of stone was much prized in China, and being aware of the existence of this colossal block of nephrite at Piopiotahi, he already beheld himself the possessor of considerable wealth. A company was quickly got up, with a merchant from Manila at the head, and a number of miners were forthwith sent to the spot, in order to blast the huge, unshapen rock into fragments admitting of easy transport. After immense labour and incredible hardships a few tons of the rock thus blasted were dispatched by the labourers to

Manila for the purpose of being tested and examined. The workmen remained some months at Piopiotahi, anxiously awaiting intelligence of the results of their toil. At last, when they had about exhausted their provisions, and were still without intelligence, they buried the fruits of their exertions, and dispersed themselves among the small Maori settlements adjoining Fovean's Straits.

The samples of nephrite were duly sent from Manila to China, where they proved to be of very poor quality, being disfigured by small black specks. For some years after small quantities of nephrite were annually brought for sale from the Piopiotahi to Wellington, where they found plenty of purchasers among the natives of that district at about 1*s.* per lb.

In former days the Maori used to make long and difficult journeys from the east to the west coast of the island, in search for the much-prized stone. When found it was usually shaped and polished by rubbing it upon a flat sandstone block; this operation was so long and arduous that its completion was often the work of two generations; and this is probably the main reason why such value is attached to it. The extraordinary hardness of the stone, which admits of its being ground to a very sharp edge, also made it an excellent substitute for iron in the manufacture of hatchets and chisels, the New Zealanders having only become acquainted with that metal since their intercourse with the Europeans.

The shape which the Maories gave the Meri-meri when completed, resulting from the absence of implements with which

to manipulate this stone, which is so hard that even iron does not bite it, probably gave rise to the notion that when found the stone is in a soft state. Sandstone, however, is found efficacious in the process just as it polishes iron also, and the holes requisite for suspending it, are made by the very simple process of drilling with a piece of pointed hard wood, with fine sand and a little water.

Cannibalism may be said to have entirely ceased in New Zealand. Any allusion to this revolting practice is very painful to the New Zealander of the present day, as reminding him of his former low position in the scale of nations. Every time that we endeavoured to make any inquiry of the natives respecting this custom, they withdrew with an ashamed look.

In like manner dog's flesh has ceased to be an article of food, ever since the introduction of pork by Captain Cook. Formerly the native or Maori dog, which at present is very scarce, was eaten on certain occasions, while its blood played a somewhat conspicuous part in Maori pharmacy.

The vegetables most extensively used for food before the arrival of the Europeans were :—

1. Raorao (*Pteris esculenta*), a fern three or four feet high, which covers vast tracts of land, and the root of which, before the introduction of the Peruvian potato, formed the chief subsistence of the Maori.

2. Kumara (*Convolvulus Batata*), or sweet potato, the most valuable of New Zealand products. Various legends of adventure exist among the natives respecting its first introduc-

tion. The harvest-time for this plant is accompanied by a grand festival, and the fields in which the Kumara is grown, as well as the labourers engaged in raising it, were declared by the priests *taboo*, or consecrated. Of the varieties of the Kumara, one, the size of a yam-root, is named *Kai-pakeha*, or "white man's food," and is exceedingly palatable. The common potato (*Solanum tuberosum*) was first brought hither from the Cape of Good Hope, by Captain Cook, who planted it here.

3. Mamaku (*Cyathea Medullaris*), one of the most elegant tree-ferns in the country, whose whole stalk, sometimes 20 feet high, is edible, and is sufficient to maintain a considerable number of persons. The pith of the Mamaku, when cooked and dried in the sun, is an excellent substitute for sago.

Fermented liquors, like the Kawa of the South Sea Islanders, or the Chicha of the Indians of Southern and Central America, seem never to have been known to the New Zealanders.* The only fruits from which liquors are occasionally prepared are the Tawa (*Laurus Tawa*) and those of the Trepa-Kihi (*Coriaria Sarmentosa*), the latter of which, however, when the stamens of many are mingled together, is apt to be followed by symptoms of poisoning, resulting in violent convulsions and death.

Although their short stay at Auckland, coupled with other indispensable business, did not admit making an adequate number of measurements of the physical proportions of both

* The sick were formerly made to drink the fluid contained in the shells of fresh and salt water *Conchyliæ*.

sexes of natives, we nevertheless had an opportunity of measuring some individuals, whose appearance seemed to present a very fair average.

Here we ought to remark that many years ago, Dr. A. Thomson, surgeon of the 58th regiment, impressed apparently with the value of these experiments as aiding the diagnostics of various races of men, had made a great number of measurements of the natives during a long residence on the island. These, however, were mainly confined to height, weight, magnitude of chest, and physical strength of individuals, but which are of much value, having been compared at the time with similar results obtained from an equal number of British soldiers, thus furnishing most interesting standards of comparison for the two races. Dr. Thomson measured, for instance, the height of 147 natives, and found them to average 5 ft. $6\frac{3}{4}$ inches. Of these, 35 measured 5 ft. 6 in. to 5 ft. 7 in.; 20 from 5 ft. 5 in. to 5 ft. 6 in.; 2 from 5 ft. 11 in. to 6 ft.; one 6 ft. 1 in.; and one who measured 6 ft. $5\frac{1}{2}$ in. Of 617 men of the 58th regiment, the average height was 5 ft. $7\frac{3}{4}$ inches.

Like the English, the Maories attain their full stature after they have completed their 20th year, the average height of 46 individuals between 16 and 20 being 5 ft. 6 in., whereas of individuals between 21 and 25 it was 5 ft. $6\frac{3}{4}$ inches, the average height of the human race in the temperate climes of Europe being 5 ft. 5 in. to 5 ft. 6 in., according to Haller.

The weight of New Zealanders, as compared with that of English soldiers, gave the following remarkable result in the

case of 150 men of both races who were examined at Auckland:—

8	Maories	weighed	more	than	112	lbs.,	but	less	than	126	lbs.	avoirdupois.
25	„	„	„	„	126	„	„	„	„	140	„	„
54	„	„	„	„	140	„	„	„	„	154	„	„
41	„	„	„	„	154	„	„	„	„	168	„	„
19	„	„	„	„	168	„	„	„	„	182	„	„
3	„	„	„	„	182	„	„	„	„	196	„	„

The average weight of a Maori, deducting their mats and clothes, is about 141 lbs.; of 617 Europeans (both English and Irish), who were weighed, the average weight was 143 lbs. Dr. Thompson found the natives under 21 less fully developed than soldiers of the same age, but after that the Maori began to turn the beam as regards weight.

The girth of the chest, measured above the nipples, gave as the average of 151 natives 35.36 inches; of 628 soldiers of the 58th regiment, 35.71 inches. Between 16 and 20 the chest of the native is more than half an inch less than that of the European; a little later it is found to be about the same.

In order to test the physical and muscular strength of the Maori, Dr. Thompson made them lift the utmost weights they could from the ground, with the following results from 31 individuals on whom he experimented:—

6	New Zealanders	lifted	410	to	420	lbs.
2	„	„	400	„	410	„
5	„	„	390	„	400	„
3	„	„	380	„	390	„
6	„	„	360	„	380	„
5	„	„	340	„	360	„
2	„	„			336	„
2	„	„	250	„	266	„

The average of the foregoing gives 367 lbs., the highest being 420 lbs., the lowest 250 lbs. A similar experiment made with 31 soldiers of the 58th regiment (averaging in weight 144 lbs.) gave the following figures :—

2	soldiers	lifted	504 lbs.
6	„	„	460 „ to 480 lbs.
14	„	„	400 „ „ 460 „
9	„	„	350 „ „ 400 „

Thus the average weight which the British soldiers could lift from the ground was 422 lbs., or 55 lbs. more than the Maori.

Perron in his "Voyage des Découvertes aux Terres Australes," observed as the result of numerous experiments, that the weakest Frenchman had more muscular strength than the most powerful native of Van Diemen's Land, and that the weakest Englishman was stronger than the strongest native of New Holland. Judging by that standard, the Maories are of a far more powerful build than the Australian aborigines.

What appears to us most interesting in the results of Dr. Thomson's observations, is the immense disparity of the muscular strength of the Maori as compared with that of the Anglo-Saxon race, although in height, weight, and girth they so closely resemble them. The main reason of this astonishing dissimilarity is undoubtedly due in the main to the exclusively vegetable diet of the New Zealanders, which it is well known promotes the deposition of fat in the system, without proportionately increasing the amount of muscu-

lar tissue. Moreover the uniform, uneventful life of the Maories by no means tends to the development of muscular strength.

Dr. Thomson justly remarks that the foregoing facts completely demolish the arguments of those who find a pleasure in representing the world as degenerating, and mankind as much less powerful and free from blemish than in former ages, ere trade and civilization had exercised their unpropitious influence upon the habits and manners of mankind. For here we have the New Zealanders, living up to the present century a life of the most primitive simplicity, yet evidently in respect of mere corporeal strength lagging far behind the denizens of a country, where culture and machinery have brought about social changes of such magnitude, as no other civilized people on the globe can show.

Of few races inhabiting the southern hemisphere, have the proverbs, poetry, songs, and traditions been the subject of such zealous study as those of the Maori, and no one has made more careful investigation into this interesting feature than the present Governor, Sir George Grey, who set on foot most minute inquiries into the older history of the Maori, which he published in a variety of valuable works,* although several of the missionaries, as also educated settlers of many years' standing in the colony, have extended our acquaintance

* Of these the most important are:—"Polynesian Mythology, and ancient traditional History of the New Zealand Race, as furnished by their Priests and Chiefs. London, 1855." "Proverbial and Popular Sayings of the Ancestors of the New Zealand Race. Capetown, 1857."

with the Maori race, by the publication of a grammar and dictionary of the Maori language, as also many valuable works upon the natural history of the New Zealand Islands.*

To this most honourable and widely-diffused activity, science is indebted for a specimen of literature which furnishes an excellent sample of the high cultivation of the native race, and makes us acquainted with moral axioms and pieces of poetry which would do honour even to a poet of Caucasian descent.

We subjoin a few adages and short poems of Sir George Grey's valuable collections, which more especially indicate the dignified character and originality of thought of this singular people, and are taken from a larger number embraced in Sir George Grey's collection of "Proverbial and Popular Sayings" already mentioned.

Canst thou still the surf that breaks on the Shoal of Rongo-mai-ta-kupe? (Alluding to the difficulty of allaying a revolt.)

* New Zealand: being a Narrative of Travels and Adventures during a Residence in that Country, between the years 1831 and 1837. By J. S. Polack, Esq., member of the Colonial Society of London. In two volumes. London, Rich. Bentley, 1838.—Travels in New Zealand, with contributions to the Geography, Geology, and Natural History of that Country. By Ernest Dieffenbach, M.D., late Naturalist to the New Zealand Company. 2 vols. London, J. Murray, 1843.—The Southern Districts of New Zealand; a Journal with passing Notices of the Customs of the Aborigines.—By Edward Shortland, M.A. London, Longman and Co. 1851.—A Dictionary of the New Zealand Language and a concise Grammar; to which is added a Collection of Colloquial Sentences. By W. Williams, D.C.L., Archdeacon of Waiapú. London, 1852.—The Ika-a-Mauí, or New Zealand and its Inhabitants. By R. Taylor. London, 1855.—A Leaf from the Natural History of New Zealand. By R. Taylor. Wellington, New Zealand, 1848.—New Zealand, the "Britain of the South." By Charles Hursthouse. London, E. Stanford, 1861. Of purely scientific works relating to botany, Dr. Hooker's "Flora of New Zealand" may be mentioned as the most comprehensive.

The little child grows, but the little axe remains for ever little (i. e. manhood is more valuable than any other possession).

Capricious as a salmon in the stream or a girl on shore.

The flounder flies back to hide itself in the water it has mudded.

You can search the dark corner of a house, but not the heart of a man.

Bad food will not make a man mean, but a noble man makes mean food respectable.

Kokowai or red ochre sucks up oil when you mix them. (If a chief visits you, he and his followers soon absorb all your property!)

A smooth tree you may climb, however tall it is; but how can you pass over the sea, glassy as it looks?

Perhaps, although I am little, you will find me troublesome as a sandfly.

Although hidden from us, we know there are plenty of roots of the wild convolvulus running under the ground there; so with the evil thoughts of our hearts.

You won't care to look long at the good food you have before you, but a face you love you can often look at (a pretty wife is better worth getting than a rich one).

A girl's beauty is like a fine day, a storm soon follows it; so old age and ugliness follow close upon loveliness.

There are a multitude of stars in the heavens, but a very little cloud covers many of them (meaning that a small band of resolute men may defeat a large number).

If he had taken refuge on a mountain-top we could have climbed it; if he had taken refuge amidst ocean's surge our canoes could have contended with it; but having taken shelter under the protection of a *mighty chief*, who can reach him there?

If you have a sperm whale's tooth, you must also have a sperm whale's jaw to carry it!

Quick in speech, slow to act; promises are quickly made, the body is slow to move.

A fathomless throat, but no industry; a monster's appetite, but no perseverance in labour.

He is ascending the snow-capped mountains of Ruahmi (i. e. he is growing old).

Rangipo and Raeroa started together on a journey. Rangipo carried his god *alone* with him; Raeroa carried his god on his back, and *food* in his hand; Rangipo died,—Raeroa lived.

The block of wood has no business to dictate to the artist who carves it.

I can scarcely look out eagerly from the hill-top!

A mouth, ready as a salmon, to spring at its prey.

He is a descendant of Ki-ki, who was so skilled in magic that his shadow withered trees and plants if it fell on them.

The grasp of a chief's red hand cannot be loosened, but the grasp of a slave, what strength has it?

Few are the friends that aid at planting, but when the crops are gathered they come in shoals.

An old broken canoe may be mended, but youth and beauty cannot be restored:—

A fat man has been fattened by food, not by active thought; you will find him full, but not wise.

Women and war are the two dangers of men.

A woman probably hears the foe sing as they sacrifice to their gods the bodies of her slaughtered relatives (i. e. it is of little use to have a daughter, she will perhaps raise up heirs for your foes).

Women and land are the causes which destroy men.

The Moa-bird (*Dinornis gigantea*) trampled down the Rata tree (*Metrosidero Robusta*) when it was young; how then can you expect it to grow straight now? (i. e. it is difficult to overcome early influences.)

It is from food that a man's blood is made, and it is land which grows his food and sustains him. (Never part with your own land, and do not yield a fertile district.)

Persist in all as resolutely as you persist in eating.

Be firm as the surf-beaten rock in the ocean!

Another man's food you must eat little bits of; food won by your own labour you may eat plenty of, and satisfy your hunger well.

An axe, though very little, can do as much as a man in clearing away a forest.

A fish begins nibbling gently upwards before he bites, and you begin a steep ascent from the bottom (from trifling disputes fierce wars arise).

Not less conspicuous is the vigour displayed in the poetical conceptions of the Maori. There is in them a depth of sentiment, a vividness of imagery, which would almost make us doubtful of their true origin, if the original were not at hand to compare with.

Thus, for example, how beautifully do the following lines, borrowed from a dirge for the chief Te-Huhu, describe the wild anguish of a warlike people, mourning the loss of a beloved leader:—

DIRGE OF TE-HUHU.

Behold the glare of the lightning!
It seems as though it had cleft in twain the steep hills of Tuwhare.
Dropped from thy hand thy weapon,
And thy spirit, it vanished
Behind the lofty ridges of Raukawa!
The sun hid his face, and hasted away,
As a woman hurries from the strife of battle!
The waves of ocean mourn as they rise and fall,
And the hills of the south melt away!
For the spirit of the chieftain
Was winging its way to the dwellings of Rona; *
Open, ye gates of heaven!
Tread thou the first heaven! tread thou the second heaven!
And when thou dost traverse the spirit land,
And its dwellers shall ask thee, "What meaneth this?"
Tell that her wings were torn from this our world,
When *he* died, the strong one,
Our leader in the roar of battle!
Atutahi and the stars of the morning
Look pitifully down from their fastnesses,
The earth reels to and fro,
For the mightiest support of her children lies low!
O my friend! the dew of Hokianga
Shall penetrate thy body;
The waters of the brooks shall dry up,
And the land become desolate:
I see a cloud rising afar
Above the head of Heke the renowned!
May he be annihilated, for ever
Brought low to nothingness! so may the heart,
Now mourning in its depths, ne'er think of evil more!

As deeply imbued with the spirit of true poetry is the

* Rona is a Maori maiden of whom a legend relates that the moon, irritated at her petulant disposition, carried her off to the upper regions.

following dirge of a mother, a heartfelt effusion of maternal affliction for the loss of an only daughter :—

A LAMENT FOR NGARO.

Slow wanes the evening star.* It disappears
To rise again in more glorious skies,
Where thousands hasten forward to welcome it.
All that is grand and beautiful has no more value to me,
For thou wast my sole treasure! O my daughter!
When the sunbeams played above the waves,
Or glinted through the waving palms,
Secretly, but with joy, we marked thy sportive gambols
By the sandy shores of Awapoka.
Oft in the dawning twilight
I beheld thee, girt in thy simple robes,
And accompanied by the daughters of thy people,
Speed forth, to see gathered the fruit of the Main,†
While the maidens from Tikoro ‡
Sought for thee the mussels hid among the rocks,
Braving the blinding surf, and caught for thee
The callow brood of the screaming sea-fowl.
And when at even the tribes
Assembled for the repast,
Beloved companions sought to have thee by their side,
Eagerly contending who should bestow on thee dainties,
That they might win a smile from thy lips;—
But where art thou now? Where now?
Thou stream which still dost ebb and flow,
Flow and ebb no more,
For she that did love thee is gone!
  Well is it for the people, as of old,
To assemble at the feast of pleasure!
The canoe still cleaves the air,
And dashes aside the foam of the heaving sea.

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* The dead is here spoken of as the evening star, which is supposed to rise in another world, where on its arrival it is welcomed with great rejoicings by the thousands that have preceded it.

† Main is the same as the Kumera, or sweet potato.

‡ Tikoro is the name of a race or tribe of the Hokianga district.

As of yore, hovering above the rocky cliffs,
The sea-fowl in clouds obscure the sky!
But the beloved one comes not!
Not even a lock of thy waving tresses
Is left us to mourn over!

The truly paternal interest and attention bestowed by the Government on the destinies of the New Zealanders, and on the means being adopted to raise them morally and materially, as also the repeated asseverations of loyalty, fidelity, and gratitude towards the British nation, which were constantly in the mouth of the New Zealanders (the Gascons of the South, as an English author nicknames them), gave no reason to anticipate that the colony was about to become the scene of a war, which can hardly have any other result than the total extinction of the small remnant of the Maori; for although the English troops have hitherto encountered a severe and protracted resistance, and the Maori, intrenched in their *Páhs*, required Armstrong guns, bombs, and heavy artillery to be brought against them ere they yielded, yet to the impartial observer the issue of the contest cannot be for a moment doubtful. This unhappy contest originated in the sale of some land in the province of Taranaki, or New Plymouth, on the S.W. shores of the Northern Island. A native, named Te Teira (John Taylor), had sold to Government, under the provisions of the treaty of Waitangi, a small piece of land adjoining New Plymouth. Rangitakí, or as he is better known by his Christian name, Wiremu Kingi (William King), a resolute and powerful chief of the Ngatiawa tribe, opposed the sale, on

the ground that Te Teira had in fact no right to dispose of this land without his consent, and obstructed the surveyors sent by Government to measure the piece of ground. On their being re-inforced somewhat later, Kingi took up arms to resist them, and intrenched himself on the property in dispute. How little the Colonial Government intended to encroach upon the Maori privileges, is best shown by the circumstance that the Ngatiawa tribe, and their allies of the Taranaki, are but 3000 in number, men, women, and children all told, who claim as their property districts covering an area of 2,000,000 acres, and during the last twenty years have only cultivated some small patches along the coast. The white settlers also number about 3000, and with the consent of Government have, during that period, purchased 40,000 acres, of which hardly one-fourth part is devoted to agricultural purposes. On 17th March, 1860, Kingi was at last attacked by the English troops under Colonel Gold. This was the commencement of a series of sanguinary combats, carried on with the most desperate obstinacy,* and the more serious, as it stands out in singularly bold relief, that the majority of the missionaries, Bishop Selwyn and Archdeacon Hadfield at their head, take part with the Maories, and that the learned justice, Dr. Martin, endeavours to prove that the war has broken out entirely in consequence of a breach of the rights of

* A Maori, who maintained his neutrality, though he evidently views the victories of his countrymen with partial eyes, wrote us only a few months ago, "that in the combats which marked the first outbreak of hostilities, the English lost 2000 and the Maories only 1000!"

property by the Colonial Government, and therefore that the conduct of the recusant chief, so far from being a rebellion, was a bare vindication of right! Nay, it has even been openly stated (and it throws an interesting light upon certain political complications in Europe) that the Protestant missionaries and certain former *protégés* of the Government are chiefly to blame for the difficulties now existing between the English and the natives. Amongst these adversaries a certain Mr. Davis, formerly official translator and interpreter, a highly-educated but calculating man, who once sung the praises of Sir George Grey, and among other works has published the Maori Mementos,* so interesting in a historical point of view, hit upon the clever notion, in company with a Maori named William Thompson, or "The King-maker," of instigating the natives to rebellion. With this object in view, they organized far in the interior, among the tribes hitherto but little civilized, immense popular gatherings, at which in long speeches they always contrived to come back to the assertion that the Maories and not the English were the real lords of the soil, and that they therefore were entitled to be governed by a king selected from among themselves. Thompson, thoroughly versant in the foibles and vanities of his

* Maori Mementos, being a series of Addresses presented by the Native People to H.E. Sir George Grey, Governor and High Commissioner of the Cape of Good Hope, and late Governor of New Zealand, with introductory remarks and explanatory notes; to which is added a small Collection of Laments, &c., by Charles Olivier B. Davis, translator and interpreter to the General Government. Auckland, 1855. Also, "The New Zealand chief Kawiti, and other New Zealand warriors." Auckland, 1855.

countrymen, and supported by ambitious, crafty, intriguing foreigners, was speedily master of the situation, and it is much less matter of surprise that in 1858 a king was chosen in the person of Potatáu*-te-Whero-Whero, one of the most renowned of the Waikato tribe, than that the Government, from the year 1854, suffered this conduct to go unpunished, and with cool indifference beheld the movement grow in proportion without taking the slightest precautionary measures!

Only by such indulgence, not to say negligence, did it become possible for the native league against the sale of land, and the accompanying King movement, to have attained their present importance, the number engaged in them having risen to a total of 15,000 able-bodied warriors. Since the restrictions recently placed on the importation of weapons and ammunition, there have been imported during the last three years fire-arms, powder, lead, and caps to the value of £50,000, so that we may estimate their present supply of gun-powder at 100,000 lbs. at the least, and the fire-arms, exclusive of those imported at the time of Hongi, at about 20,000 stand.

Already, at Christmas, 1858, when the staff of our Expedition were passing a week or two in Auckland, there was a

* Potatáu (i. e. shriek by night) was so far back as 1833, during the bloody contests of the Waikatos against the Taranaki, a renowned warrior and cannibal, who at that period, according to undoubted authority, had with his own hand slain 200 of the foe, and had returned home from the battle-field satiated with human flesh, and rich in slaves. In the evening of his days he was an advocate of peace, and a friend of the whites. When he died, in 1860, his son, second of the name, was declared his successor.

noticeable amount of political agitation in various parts of the interior, and we ourselves witnessed some chiefs, friendly to the Government, who before starting for a great Maori meeting near Drury offered to the Governor their good services, and asked his orders. The Maori chiefs, whom Colonel Browne received in his study, could only be distinguished from white men by the wonderfully copious tattooing on their faces, and were in all other respects attired exactly like Europeans. Some wore black round hats and blouses, others wore caps. Only in the flaps of their ears they carried small pieces of green nephrite, while suspended round the neck by a thick chord was the inevitable club-shaped *meri-meri*, that renowned stone weapon which descends as an heir-loom in families, and is so highly prized that a New Zealander will pay as high as £100 for one. The chiefs candidly remarked that at this gathering the selection of a Maori king would come up for decision, and they therefore wished, as loyal and true subjects of the Queen of England, which they said they always had been and wished to continue, to know from the lips of her representative how they ought to act in such a case. Colonel Browne, who like most of the British settlers in New Zealand seemed to attach but little importance to the whole Maori movement, or, if so, did not like to make it known, simply thanked the chiefs for this renewed expression of their loyal sentiments, adding in the spirit of Maori oratory that "he had already

considered them as good friends both to himself and the Government, and therefore left them to act as they saw best without further pledge, for he felt fully assured, if the chief (who had addressed him) should go to this gathering he might feel as if his own right hand were there, and everything therefore would result entirely as he could wish." Unhappily these anticipations were not realized, but on the contrary a war burst forth out of the long-despised movement, of such dimensions, and of such terrible cruelty, that the results of the civilization of the last twenty years have been seriously imperilled, and the original Maori, divesting himself of the whitewash of superficial Christianity, has become suddenly visible in all his savage thirst for blood. We do not indeed believe that the whole race have been seized with this much-to-be-lamented proclivity towards their old barbarism, nor that the application of the proverb (parodied from the celebrated *mot* of Napoleon), "Scratch the Maori and you will find the savage beneath," receives its full illustration here; but neither, on the other hand, can we resist the conviction that a long continuance of hostilities will foster old customs, and that a war waged with ever-increasing animosity must ultimately result in the decay and extinction of the New Zealand aborigines.

Independently of this, there was visible, even during the former days of peace and tranquillity, so marked a falling off of the Maori population, that the Colonial Government felt

called upon to institute most minute inquiries as to the supposed causes of this lamentable feature. In a very exhaustive work upon this subject, by Mr. F. D. Fenton,* we find for example that the proportion of births and deaths among the entire population—the former of which in England is 1 : 59, and the latter 1 : 34, and among the white settlers of New Zealand is 1 : 136 and 1 : 25—gives among the aborigines the following startling results,—deaths 1 : 33·04, births 1 : 67·13. The cause of this appalling decay of the Maori race, which has been steadily going on since 1830, is not alone due to the contact of the natives with civilization, but chiefly to the sanguinary wars between the various races, of which New Zealand was the theatre for a series of years, and the natural results of those wars. For it was not merely that in their constant battles the flower of their respective tribes lost their lives,† but the mothers, to facilitate their own escape, put to death most of the female infants at the breast. Upon this followed, apparently in consequence of the great privations of their wandering life, through hard work and

* Observations on the State of the Aboriginal Inhabitants of New Zealand. By F. D. Fenton, the compiler of the statistical tables of the native population. Auckland, 1859. "The object of the publication by the Government of this paper is to draw attention to the state of the native population, especially to the decrease in numbers —*with a view to invite inquiry as to the cause, and suggestions of a remedy.*"

† Of the enormous waste of human life caused by these wars some idea may be formed from the fact that at the storming and capture of the single *pah* of Matakitaki on the river Waipa 2000 warriors were killed; a larger amount of killed than that of the English army at Waterloo!

want of nutritious food, a serious sterility among the female sex. Whereas, according to Muret, out of 487 women only 20 (or 1 in 24) are barren on the average, the proportion among the Maori amounts to 155 in every 444, or 1 in 2·86.

The want of nutritious and wholesome food, their diet consisting mainly of salt-fish, roots, and fruits, the absence of clothing, or any care for the body, their wretched abodes, and exposure to the weather, all these causes must greatly contribute to the diminution of the race, as affecting the conditions of sound health of the present generation, and tending to produce those forms of disease, such as scrofula, pulmonia, phthisis, &c., by which the Maories and their offspring are at present decimated. Dr. Fenton also adduces the intermarriage of near relations among the New Zealanders as one prominent cause of their disease and physical degeneracy. These near alliances, however, at least among the lower classes, do not seem so frequent as Dr. Fenton imagined, as is apparent from the surprising diversity of physiognomy and colour of skin. The chiefs indeed of the tribes, who migrated from the north some four centuries since, may indeed have so frequently intermarried that they now constitute little other than a large family connection, but the populace have most undoubtedly made frequent alliances with the inhabitants of the adjoining island groups, as they are to this day accustomed to do with the whites, from which

latter cross results the unhappy bastard race Paketa-Maori, which, like the quadroons of Louisiana and the mulattoes of Hayti, or the mestizoes of the Indian races of South America, despising the pure blacks and looked down upon by the whites, are the sworn foes of both.

It seems to us too hazardous a speculation to go into minute investigations as to the decay of the Maori race, and the most suitable means of averting that disaster, at the very moment when their foreign conquerors, in order to strengthen their power, are actually engaged in a war of annihilation with the aborigines.* It is much more important, and will better repay our time, to enumerate the advantages which must accrue to European, especially German, immigrants into a country where the natives have played out their part.

As already remarked, there are few countries beyond the limits of Europe which are so favoured as regards climate,

* Of the bitter feelings excited by the Maori revolt among the inhabitants of Australia, an idea may be formed from the fact that Dr. Mackay, a well-known personage in political circles at Melbourne, seriously proposed to the Government of Victoria to send a volunteer expeditionary force to the seat of war, to assist in suppressing the rebels. The expenses, which Dr. Mackay estimated at £15,000 to £20,000, were to be repaid by sales of land in the conquered portion. Nay, this learned expounder of the "law" went so far as to pronounce the subjugation of these "savages" as imperatively necessary. The men were to be shipped off to Melbourne, to work as "SLAVES" for seven years; the females to be carried away and disposed of as wives for the Chinese and well-conducted white convicts! Dr. Cairns, Bishop of Melbourne, and other ministers of the gospel, adds this humane philanthropist, to be at liberty to use "*all fair means*" (!!!) for their conversion.—Compare *Sydney Morning Herald*, Saturday, July 21st, 1860.

fertility of soil, natural wealth, and geographical situation,* or hold out such excellent prospects of ultimate comfort and prosperity, as New Zealand. The mean temperature of the whole islands for the year is 56° Fahr., and is 5° less at the south, and in the north about 4° higher, so that, for example, Auckland possesses the same temperature as Florence, Rome, Marseilles, or Toulon.† Gales are frequent along the coast, and the damp south winds known as "bursters" are exceedingly disagreeable and oppressive, but they do not on the whole affect the health of the inhabitants. According to Dr. Thomson's observations, it would seem that of every 1000 soldiers in the various British military stations 8·25 die in New Zealand, 14 in Great Britain, 18 in Malta, 20 in Canada.‡

* The most important American, Indian, and Australian markets may be reached by screw steamer from Auckland as follows:—

	Miles	Days		Miles	Days
New Caledonia ...	1250	5	Singapore	5050	18
Tahiti	2380	9	Calcutta	6820	26
Sandwich Islands ...	4060	14	Sydney	1260	5
Valparaiso	5420	20	Melbourne	1420	6
San Francisco ...	5950	22	Adelaide	1780	7
Batavia	4750	17	Hobart Town ...	1250	5
Manila	4650	17	Panama	5320	20

If the contemplated route viâ Panama be made available (with a coaling station at Gambier Islands), some 3500 miles or 14 days' sail would be saved, so that New Zealand would be reached in from 41 to 48 days, and Sydney and Melbourne in about 53 and 54 days respectively.

† According to Dr. Thomson's meteorological observations, the following are the averages for the town of Auckland (36° 50′ S.), temperature 59½° Fahr.; rain-fall 45½ inches; days on which rain falls 160; barometer 29·95 inches.

‡ Not less interesting are the returns as to the number of soldiers attacked with consumption and who died of it at the various garrisons, which are as follows:

Of the superficial area of New Zealand, which, if we include Stewart's and Chatham Islands, may be estimated at 75,000,000 acres, one-third consists of forest and bush capable of being reclaimed for agricultural purposes, one-third of meadow, grass-pasture, and valley, well adapted for cultivation, and the remaining one-third of barren rock, or sandy desert, besides lakes and rivers.

The amount of land, in various holdings, reclaimed and made fruitful throughout New Zealand for the year 1857 was 190,000 acres, of which 121,648 were arable land, sown with esculents (chiefly wheat, oats, potatoes, and grass for fodder) and fruit. Of late years the annual increase of land reclaimed has been 40 per cent. It is calculated that each new arrival from Europe is equivalent to the cultivation of four acres of land, and the breeding of 30 cattle. The cost of clearing amounts in New Zealand to from £2 to £5 per acre.

Hence it is that the Colonial Government are straining every nerve, by holding out certain material advantages and inducements, to attract land-purchasers and handicrafts-men to a country, which, inhabited at present by not more than 130,000 human beings, is quite capable of supporting 30,000,000. The "Auckland Waste Land Act," besides giving every necessary information as to the unreclaimed dis-

Of 1000 soldiers there were

	Attacked	Died		Attacked	Died
In New Zealand ...	60	2·7	At Malta	120	6
At Cape of Good Hope	98	3	In Canada	148	6·7
In Australia ...	133	5·8	In Great Britain ...	148	8

tricts (where land is sold at ten shillings per acre), also contains certain arrangements, by virtue of which intending emigrants of the labouring classes, who shall come out at their own expense, receive some assistance to enable them to settle on certain proportions of the land which the Government presents to them by way of indemnification for the expenses of their voyage, in the proportion of 40 acres to each person above 40 years of age, and 20 acres to all between 5 and 17 years.* The sole condition attached by the Government to this land-indemnity is that the emigrant bind himself to remain five years in the province; which period once elapsed, he may dispose of the land at his pleasure. In order to encourage persons accustomed to tuition to settle in Auckland, all persons who are fitted to instruct children in elementary knowledge and English grammar, on their having discharged such duties for five years to the satisfaction of Government, are entitled to a grant of 80 acres of land.

The most important products and articles grown for export are, all sorts of cereals, wool, and ship-timber. A marked increase has taken place in potato cultivation, of which in 1857 there were exported 4430 tons, value £23,328, and in 1858, 6116 tons, value £33,056. Of building timber of all sorts there were exported in 1857 £12,205, and in 1859 £34,376 in value.

* These grants, however, are only made to the person who actually defrays the expenses of the passage: thus they are not made to children, but to their parents; not to the servant, but to the master, who has paid the passage of the former.

One of the most valuable trees of the New Zealand forests is the Kauri pine (*Dammara Australis*). This elegant tree, 80 to 120 feet in height, furnishes the English ship-building yards with a large number annually of rounded logs, 74 to 84 feet in length, of better quality as well as more lasting than those of the Norwegian or American pines.* The Kauri or yellow pine also produces the kind of rosin so well known as Dammara rosin, of which this valuable tree produces such quantities, that in those districts where the Kauri tree has long since yielded to the axe of civilization, it has been found in immense masses on the soil, in a high-dried state. The Kauri rosin of commerce is not therefore procured, as with us, by making an incision in the tree, but is actually dug out of the earth, into which to the despair of the farmer it has often percolated for several feet, rendering the soil barren. During our excursions we came repeatedly upon whole tracts of rosin-fields, which were covered several feet thick with this substance. The Dammara pine only grows on the northern-most island, and chiefly in the northern parts.

In Auckland we saw several pieces of Kauri rosin weighing 100 lbs. In 1857, 2521 tons, worth £35,250, of this substance were exported, chiefly for its valuable properties as a varnish, and for "fixing" certain colours used in the calico manufacture. It has also of late been extensively used in the manufacture of candles.

* Besides the Kauri pine, there is abundance of Rimu or red pine, the Kahi-Katea or white pine, the Tanakaha or pitch pine, the Matan or black pine, as also the Puriri or New Zealand oak, all trees of great utility.

The cultivation of the Harakeke, or indigenous flax (*Phormium tenax*), might be made to conduce greatly to the wealth of the country, if some mechanical process could be invented which should without too much expense liberate the fibres from their hard envelope, which is the only obstacle in the way of its competing successfully with Russian flax. Impressed with the importance of developing the cultivation of *Phormium tenax*, the Colonial Government has offered a reward of £1500 for the invention of such a machine as shall bark the native flax, and prepare it for and make it saleable in the European market. At present no more than 50 or 60 cwt. of the flax, worth about £800, is exported from Auckland. The New Zealand flax surpasses almost every known plant in the strength and toughness of its fibres, its ratio as compared with the fibres of European plants of the same species standing as high as 27 : 7. For Great Britain the cultivation of this flax is not alone of great interest in an economic point of view, but is even politically of importance, as the amount of flax annually imported from Russia for her industrial energies averages £3,000,000.

Sheep-farming has of late years made an enormous advance in New Zealand, the export for 1857 being 2,648,716 lbs., value £176,581, that for 1859, 5,096,751 lbs., value £339,779, averaging 1*s.* 4*d.* per lb. The list of articles suitable for export must continually increase with immigration, and the consequent spread of population through the interior.

The entire commerce of New Zealand, both import and

export, is at present about £2,000,000, the value of imports having risen from £597,827 in 1853 to £1,551,030 in 1859, while the exports, which in the former year were only £331,282, had risen in 1859 to £551,484. The last-mentioned year employed 836 ships, of which 438, representing 136,580 tons and 7594 of crew, were engaged in the import, and 398 of 120,392 tons and 6483 of crew, were employed in the export trade. The net revenue of the Government for the same period was £459,648.

The majority of the colonists are emigrants from Great Britain, only a small fraction coming from the continent.* A large Irish population lives in the neighbourhood of Auckland, while the Scotch cling together about Taranaki and the southern parts of the island. The European population was 52,155 in 1857, and 73,343 in 1859, the proportion of sexes in the latter year being 42,452 males, and 30,891 females.

While most of the naturalists of the *Novara* staff went on the invitation of Government to examine the coal-beds lately discovered in Drury district, others made frequent excur-

* At the period of the *Novara's* visit to Auckland the proportion of the various nationalities and religions were as follows:

Nations.		Religions.	
Irish	11,881	Catholics	7,500
Scotch	11,881	Presbyterians	7,500
English	35,644	Wesleyans and Dissenters ..	15,000
Germans and other nations ..	594	Episcopalians	30,000
	60,000		60,000

sions in the environs of Auckland, three of which deserve special mention.

The first was to the picturesque Judges and Oraki Bays, the latter formed by the ruins of a crater. Here for the first time we beheld what is called the New Zealand Christmas tree, *Metrosideros Tormentosa*, which at the festive season comes forth pranked in all its gay blossoms, and is extensively used in decorating churches and dwelling-houses. Its large deep-red, umbellate blossoms are visible from afar gleaming among the green vegetation along the coast. The natives call this tree the Pohútu-Káwua; it is most extensively found on the slopes along the coast. The wild pepper, Kawa-kawa (*Piper excelsum*), is very common in the country round Auckland, but is not brewed into an intoxicating drink like the *Piper methysticum* of the Southern Ocean. The natives indeed are exceedingly temperate, and, unlike other half-civilized races, are very little addicted to drink; this however may be partly due to the wise precautions of the Government, which under a heavy pecuniary penalty forbids all tavern-keepers throughout the province from selling the Maori any drink except beer. Two species of grass eminently characteristic of the country, which often overrun vast tracts of land, and are used by the natives for thatching their huts, are the Toi-toi (*Lepidosperma elatior*) and the Kekaho (*Arundo Australis*). There are also the Puka-puka, or paper-seed (*Brachyglottis re-*

panda), an object which, where it is found, imparts a peculiar aspect to the landscape, like the silver poplars on the flanks of Table Mountain at the Cape. The name of the plant is derived from the under side of the leaves being as white as paper.

We also during this excursion saw great quantities of Raorao or Aruhe (*Pteris esculenta*), and were told that the roots (*roi*) of this fern, baked and ground, were highly prized by the Maories as a specific against sea-sickness. No native makes a sea voyage, at least to any distance, without carrying with him a piece of this root, using it when baked as an antidote against that most depressing of maladies, from which even primitive races are not exempt. The efficacy of this remedy is however rather reputed than actual, the experience of Europeans, who have availed themselves of its supposed virtues, tending to show that it is absolutely worthless.

While at Oraki Bay we also visited the Maori village of Oraki. Here we found some 80 natives, men, women, and children, who had encamped on a hill outside the village. They were clothed partly in European style, partly in clothes made of native flax. The diversity of feature was most remarkable, as was also the great difference in the hair of the head. Some had thin black, others crisp, hair; many had it of a dark brown colour, while yet others had regular fox-coloured locks. The elder men had

their faces and hands beautifully tattooed; the women on the lip only, and the younger generation were not tattooed at all. After the customary salutation of "Tenákoe, Tenákoe" (which in fact means literally nothing more than "Here you are," or "I recognize you"), they were little communicative, and showed little disposition to enter into closer conversation with the foreigners, although some of our companions spoke their language fluently. As our instructions were to ship on board the *Novara* any handsomely tattooed natives who should of their own free will wish to enter our marine, we let slip no opportunity, and accordingly endeavoured to induce some of the natives we now saw to ship with us. However, they could not be persuaded to make a cruise with us to see other lands and nations, as they could not comprehend what motive Austrian voyagers could have in inviting the natives of such a distant quarter of the globe to join them on such favourable terms. Their chief hesitation arose in the idea which they, the offspring of cannibals, firmly believed, that we wished to take some of their companions with us instead of fresh provisions, with the ultimate intent, so soon as we ran out of victuals, to put them to death, and banquet on Maori flesh! Thereupon we showed them some Caffres who had been 15 months on board, and were perfectly well treated. "Who knows," replied one of the most cautious of the Maori, "very possibly the Caffres have only been spared

because the necessary moment has not yet come!" We returned to Oraki, our efforts vain to induce any Maori volunteer to make a cruise.

A not less interesting excursion was made to the Kauri forest in Titarangi, among the Manukau hills, to which we were conveyed in a couple of dog-carts. It was an exquisitely beautiful sunny morning. The air was so invigorating yet so mild that we immediately felt how well Sir Humphrey Davy's celebrated remark about Nice, "mere existence here is luxury," may also be applied to Auckland. After a drive of three hours through charming fields and meadows, we entered upon the forest at a spot where an Irishman named Smith has erected a block-house and a saw-mill, which seemed to do an excellent business. The whole appearance of the farm and its residents made a most favourable impression. Old Smith accompanied us in person to the forest, which consisted principally of the lofty, slender, broad-leaved Kauri pine. These have much more the look of chestnut trees than fir. The whole forest displayed a luxuriance and beauty of vegetation such as we had not anticipated in these latitudes. Creepers, parasites, and tree-ferns, gave it quite a tropical character. There were a charm and a voluptuousness about this green garb of nature, as displayed in New Zealand, such as the virgin forests of even the Nicobars or Java could hardly surpass in grace and majesty.

The slender trunks of the Kauri pine, the Rimu (*Dacrydium*

Cupressinum), and the Kali Katea (*Podocarpus excelsa*), are here sliced into planks and boards, and so transported to the port. 100 cubic feet are worth about 15*s.*, and 100 cubic feet of the beautiful Rimu wood, which is much used for furniture, fetches about 30*s.* A saw-mill labourer is paid from £7 to £8 per month, besides rations.

On our return, thoroughly fagged out and overheated with three hours of climbing and rambling, to the hospitable residence of our worthy Irish friend, we found an elegant carpet spread on the floor of the room, and everything clean and neat, to welcome the unexpected guests. His entire family was waiting to receive us, and after a comfortable meal we took our leave, doubly impressed with the glories of New Zealand forest scenery, and agreeably surprised to find in such close proximity with half-reclaimed nature such a peaceful picture of contentment, and such sterling results of well-directed human industry.

While our eyes were still dazzled with the beauties of the New Zealand forests of the Manukau range, a visit to St. John's College gave us an excellent and cheering glimpse of the admirable zeal displayed by various philanthropists to impart instruction in the great truths of Christianity to the coloured race of this and the adjacent groups of islands, and to educate missionaries. St. John's College has been set on foot with this praiseworthy object in view by the Church of England Missionary Society. Of the forty lads who attended it while we were there, the majority came from Loyalty

Islands, the Solomon Group, and New Caledonia. Many only remained at the institute during the warm summer months, and for health's sake returned before winter set in to their own milder climate. Some had thus returned to school for the fourth time. The management of this humane undertaking is entrusted to Mr. Patterson, a gentleman of remarkable ability and perseverance, who speaks with fluency most of the Polynesian languages, and annually faces much privation and danger during his visit, in a schooner provided by the Missionary Society, to the various islands of the Southern Ocean, where he communicates with the natives, urging them to give their children the benefits of a certain amount of education. The course of instruction consists of reading, writing, arithmetic, and religion. It is unfortunate that no provision is made for their instruction in mechanical employments, as such knowledge would go far to make their heathen kindred appreciate the advantages of Christian civilization. The pupils seem to be warmly attached to Mr. Patterson, and regard him with the child-like reverence paid to a father. The results are surprising, and demonstrate what splendid germs of capacity for education lie slumbering in even the rudest primitive people, if only care be taken to awake them sufficiently early, and foster them judiciously.

As in all English colonies, there is much intellectual activity in Auckland. Several English journals,* some

* The Government also publishes at its own expense a Maori paper weekly, Te Karere Maori, the Maori Messenger, the subscription to which is 5*s.* 6*d.* per annum,

really well written and digested,—such, for instance, as "*The Southern Cross*," "*The New Zealander*," &c.,—not only discuss the most important political events, but also endeavour to enlarge the views of their readers upon all questions of political economy and commercial and industrial progress.*

A few months before our arrival a paragraph appeared in several English and German journals, one of which accidentally fell into our hands at Shanghai, to the effect that "in April, 1858, considerable excitement had been created in England by intelligence of a peculiar species of silk-worm having been discovered growing wild in New Zealand in immense quantities." The London correspondent added that the worm inhabits a cocoon which is of a dull brown externally, under which however is a particularly fine quality of silk, with which some Glasgow houses had made

and is intended to keep the coloured population informed of the most important political and social events, as also to tend to their civilization. We subjoin the contents of a single number now lying before us. "The laws of England.—Remarks upon ship-owners.—Official notices.—Letter from the chiefs of Chatham Island.—Farming, commercial, and maritime news.—Price current.—Speech of some brown chiefs at a meeting at Mongonui.—Letter from Bay of Islands.—Deaths.—The Auckland infirmary.—Government orders, &c." Colonel Brown deserves special praise and acknowledgment for the publication of the laws of England in Maori, accompanied with the original text, although the fruits of this arduous but important labour may only gradually become apparent.

* It is especially worthy of remark, that wherever the Anglo-Saxon race colonize, the newspaper and the post-office follow the footsteps of the first settlers. After these come the church and the school-house. Newspaper perusal and dispatch of letters are among the first necessities of life to the Englishman. In the whole of New Zealand there were, in 1858, 64,357 copies of the various journals struck off, and 482,856 letters received and dispatched. The province of Auckland alone figures for 239,367 papers and 133,121 letters.

experiments that induced them to value it much more highly than the qualities hitherto procured in Europe. Owing to the great alteration in the prospects of the silk trade, generally held out by the march of events in China, we deemed it advisable to inquire minutely as to the existence of a worm, which, as reported, not merely enjoyed advantages of climate similar to those of several parts of the Austrian domains, but seemed to require but little attention, living, as was said, "wild" in the "bush." After protracted investigation, however, it turned out that the silk procured in New Zealand was furnished by the ordinary mulberry-fed silk-worm, and that the extraordinary delicacy attained in the fabrics made from it at Glasgow was only due to its very superior quality.

The little expedition to the coal-beds of Drury already mentioned was accompanied by results so valuable, that considerable excitement arose among the settlers of the district, and a society was formed for the exploration of this mineral wealth. The excursion, however, was not confined to visiting the coal-fields, but was intended to give the naturalists of the *Novara* an opportunity of seeing part of the interior of New Zealand, by traversing the forest, 9 to 15 miles wide, between Auckland and the river Waikato, and thus visit the lovely shores of that river and the native villages of the neighbourhood.

The expedition was under the conduct of Capt. Drummond Hay, aide-de-camp to the Governor, and thoroughly

acquainted with the country, and Mr. Heaphy, chief engineer of the province; Mr. Smallfield, editor-in-chief of the *New Zealander*, accompanied it as historiographer, while the Government invitation was extended to several of the scientific inhabitants of Auckland, among others the Rev. Mr. Purchas, and a recently-arrived German named Haast. The following is an extract from a journal, kept by one of the party from the *Novara*, of all the most interesting episodes of this excursion :—

"On 28th December we set out in five waggons, and advanced among extinct craters and volcanic cones, on which in former times *Pahs* or intrenched villages had been erected by the natives, as is plain from the succession of terraces of three or four feet high, rising in regular order, and cut into the side of the hill. The villas and farms on either side of the road, or at the foot of the hills, buried in their splendid flower-gardens, formed a charming contrast with the ancient lava currents, stretching in every direction and over-grown with tree-ferns and dense coppice. Now and then horses were rolling about upon the velvet-like meadows, or herds of cattle and flocks of sheep were passed feeding and ruminating, and bearing ample testimony to the advanced stage of material progress so quickly attained by one of the youngest of English colonies.

"Already we had found banners waving from the houses of Otahuha, a little village closely adjoining a very interesting extinct volcanic peak with a crater, and during a brief halt

we made here, crowds of well-dressed inhabitants came flocking in to welcome the German guests of the Government, who were to develope the natural wealth of the country. From Otahuha the road lay across the plains of Papa Kura (red levels) to Tamaki. It is a wide paved road well ballasted, the bridges solidly built, everything, in short, betokening the fostering care of an enlightened Government, making it a point of duty to open up as speedily as possible convenient means of communication between the capital and the interior. The farms and country-houses were not so numerous in this section, though the rolling country seemed of excellent quality.

"At last, about 1 P. M., we reached Drury, a rather large settlement 29 miles from Auckland, where we were most cordially welcomed. Young's Hotel, which had been engaged for the Expedition, was gaily decorated with flowers, rare forest plants, and ferns, while from the gable floated side by side the British and Austrian standards.

"Drury is situate in a fertile rolling plain, the country is everywhere fenced in, corn-fields and meadows give variety to the landscape, and the well-to-do, fresh-looking countenances of the settlers, the groups of rosy-cheeked children, and the herds of splendid cattle, amply attest the salubrity as well as fertility of the neighbourhood. The party now split into two. Our geologist, with several companions, went forward about a mile and half from Drury into the forest,

there to commence his investigations at a spot where a coal-bed 12 feet thick had been laid bare. The rest of the naturalists strolled about, engaged in botanical and zoological researches among the soft, beautiful woodland scenery of the almost *soul-enchaining* primeval forest.'

"A couple of days were passed in such little excursions in the environs of Drury, in the course of which a trip was made in a Wakka or New Zealand canoe to the Tahike springs, near a Maori village of the same name. Our craft consisted of a single hollowed-out trunk of a kahika tree (*Podocarpus excelsa*), about 25 feet in length by $2\frac{1}{2}$ in breadth. For such a boat a native pays about £5, and it lasts from 20 to 30 years, whereas a canoe of red Totara (*Podocarpus Totara*) costs when complete about £30, but lasts much longer. Canoes are frequently pointed out prepared from these giants of the forest, 70 feet in length and from five to six in breadth, which were used in old times as war-canoes (Wakka-wakka), and could accommodate 100 warriors. Ours was covered at either end with fresh-gathered ferns, and was provided with four paddles tapering to a point, one of which was used by one of the Maories who accompanied us, while we applied ourselves to learning the management of this novel mode of propulsion by seizing on the rest, and by imitating his motions speedily mastered its difficulties. Unfortunately, owing to the distance, we could not reach the village itself, and, after a variety of curious adventures with

the natives, found ourselves compelled to return when about half-way, in order to husband our strength for the exertions of the ensuing day.

"By dawn the noise in the hotel drove away all further thought of sleep, and presently came flocking in from every quarter the horses, both saddle and pack, which had been engaged for the expedition. The morning broke in uncommon splendour, and the whole landscape lay bathed in a rose-coloured flush, whose exquisite tints recalled the immortal beauties of Claude Lorraine. The winding road that leads over the intervening hills begins at this point to be impracticable for wheeled vehicles, although it is possible to advance a few miles farther in country cars. For upwards of an hour we rode along through beautiful rolling pasture land, for the most part neatly fenced, and covered with herds of noble cattle. Now and then we came upon a stately mansion, buried in flowers and foliage, whose appearance sufficiently attested that the proprietor had long since left behind the struggles of the early days, when the hardy settler inhabited a wretched log-hut (whari), a "clearing" cut with incredible labour amid an almost impenetrable forest, the soil of which he had to prepare for the reception of corn-seed.

"At last we reached the forest, which extended from where we were to the banks of the Waikato. The deeper we penetrated into it, the closer and more majestic grew the trees, and the denser and more impervious was the underwood. Gigantic trees, 150 feet in length of stem, were entwined,

trunk, limbs, and summits, with flexible lianæ and other parasitical creepers, while birds of the strangest descriptions were flitting hither and thither among the trees, alarmed by the tramp of our horses, which echoed strangely loud through the silent depths of the forest. The most frequently visible of these feathered denizens of the forest is the Tui (*Prostemadera novæ Zelandiæ*), called 'the parson' by Captain Cook, in consequence of its having two white feathers in the lower part of its neck resembling bands. In colour and shape it is very like the kingfisher, and its melodious notes present great variety. In addition to the Tui, the forest is frequented by the Kakariki (*Platycercus N. Z.*), a small green parrot, which, stealing softly through the mysterious greenwood shade, emits its singular shrill shriek. We also fell in with a solitary specimen of the New Zealand cuckoo (*Endynamys Taïtensis*), called by the natives Koekoea, which was eagerly bagged by the zoologists.

"After riding half an hour into the forest we came to Rama-Rama, a settlement founded about three months previously by a rich English colonist. About 70 acres English were already reclaimed, and in some parts of this patch of land, so lately arrested from the wilderness, peas, turnips, beans, potatoes, and other kitchen vegetables were already peering above the surface. Two small huts, constructed of the stem of the tree fern, and thatched with reeds, had been extemporized as kitchen and sleeping apartment for the occupier of the soil, a highly-educated, well-informed, gentlemanly

man, named Martin, and his labourers, while on an eminence at a little distance preparations were being made to erect a handsome dwelling-house of wood, whence this skilful shepherd-prince will be able to overlook his flocks and herds, and delight his eyes with the prospect of his rapidly multiplying horned stock.

"The road now became narrower and more difficult, the horses too began to find their footing less secure, and it was only by great vigilance that we contrived to ride over the marshy soil, thickly covered with massive roots of forest giants. Enormous trunks of trees that had fallen across the path had to be scrambled over, and the baggage removed from the pack-horses and carried forward on men's shoulders. Some of the horses, inured to similar expeditions, clambered nimbly over these obstacles, while for others, more restive or less practised, bridges had to be constructed, which are formed by laying two trunks of trees parallel with each other across the chasm or brook, upon which fern or reeds are placed transversely, and the whole tied together with twigs of liana, so as to afford the animals a firm footing. Occasionally this frail apparatus would break through, when the poor horses would disappear below, whence they were only extricated with considerable trouble.

"Towards evening the forest began to get less dense, and we entered upon an undulating table-land, covered with ferns. Some columns of smoke, curling upwards at the foot of a hill on the further side, indicated that we were approaching

a Maori village. In front of us lay the valley through which flows the Mangatawhiri, which falls into the Waikato a little lower down. The course of the latter was traceable by a range of hills whose elegant outlines bounded the horizon. We experienced a most friendly reception from the natives of this village, and were lodged in the newest *whâri* or New Zealand hut. This is constructed in the shape of a quadrangle with elliptic sides, about 20 feet in length by 14 feet in breadth, and consists of stakes of palm driven in close to each other, and tied together. The roof, which is 15 feet high in the centre, gradually sloping to about 8 feet at the side walls, is of thin slips of wood, and is covered over by a dense layer of native flax, so ingeniously woven that it is impervious to water, which accordingly runs off. The roof is for the most part supported simply by an upright pole in the midst, but occasionally several of these are used, so as to impart greater strength to the roof. The side walls are usually covered with large mats made of woven rushes. In the middle of the two longer side walls are two doors placed exactly opposite each other, between which a species of corridor is made, which divides the hut into two apartments as it were. In the event of bad weather, a small whâri close at hand serves as a kitchen, the Maori usually following all culinary avocations in the open air in front of his hut.

"The village consists of some 15 huts scattered at random, among which some of the inhabitants of both sexes, clothed in European attire, were sitting or lounging upon the ground,

or crouching upon their hams. Around, in sympathetic glee and full security, sprawled a squad of pigs and children, some naked, others half-clothed. Most of the adults stretched out their hands in the most friendly manner. Here we had again occasion to remark the extraordinary diversity of physical appearance in various individuals, no two of these Maories being like each other in complexion, hair, or figure. In front of one of the huts a native oven was standing uncovered, the mid-day meal being just over; after the earth and other matters had been removed there appeared, each lying on a cool-looking cabbage leaf, some splendid potatoes and eels from the river. The Hangi-Maori, or Maori oven, is nothing but a hole some three feet long by one and a half deep excavated in the earth. In this a strong fire is made of dried timber, and when fully alight stones are placed over the flames, and kept there till they are in a state of incandescence. As soon as the wood has been consumed the ashes are carefully removed, and a little wet flax thrown upon the hot stones, above which again is placed a layer of fresh cabbage leaves. These form as it were a bed for the food to be cooked, be it meat, vegetables, fish, or fruit. The viands are then covered with another course of leaves, two mats of rushes being placed on the top, after which the earth excavated is heaped over the pile and pressed firmly down, so as to prevent the escape of the steam thus generated. If there are no cabbage leaves handy, a substitute is made of the leaves of the Tuakura (*Dicksonia Squamosa*), a species of

fern which grows in great luxuriance among the moist spots. These leaves impart to the meat a peculiar and agreeable flavour, whereas other plants are apt to alter the ordinary taste of the food.

"The women and girls were busily engaged during a few minutes in weaving little baskets of rushes, in which the potatoes were served up garnished with eel. A plateful was handed to each of our party, which we were courteously pressed to eat. In every Maori household there is always a sufficient quantity cooked to admit of any casual traveller or a neighbour partaking with the family; for the Maori possesses in perfection the savage virtue of hospitality, as we frequently experienced.

"The master of the hut in which we passed the night had suddenly disappeared, and was busily engaged, as we witnessed through the open door, in arranging his hair, which he combed carefully, after which he anointed it with eel-fat, which he also plentifully smeared over his face, neck, and arms. This curious toilette completed, he wrapped a clean mat round him, and presented himself in full fig, to bid us all due welcome. The mode of salutation among the New Zealanders is unique. The party saluting draws his head rapidly backwards, and winks a couple of times with half-closed eye and laughing face!

"Our bivouac suddenly received an unexpected accession of new arrivals. From the mountain ridge which we had just passed six horsemen were seen descending at full gallop

and making for the village; they proved to be young Maories, mounted on handsome horses, who, having been apprized by a relative, whom we had met in the forest, of the arrival of *Pakehas* (white men), had come hither partly out of curiosity, partly to do us honour and show us hospitality. They all wore European clothes, rode in good English saddles, and bestrode powerful horses, which they seemed to manage with much grace. There are numerous Maories who have from 50 to 60 head of horses, and whole herds of cattle, besides several thousands of pounds lying in bank.

"In the course of a stroll through the village we not only observed fields planted with the customary rotations of wheat, oats, maize, potatoes, cabbage, and so forth, but on the banks of the river came upon a new mill, constructed on the English system, almost ready for work, which had been erected by an Englishman at a cost of £500, to be repaid by the tribe. The erection of this grinding machinery is the more indicative of the speculative turn of mind of the Maori of the present day, that they use none of the flour for their own primitive household, but manufacture it solely for the purpose of selling it advantageously at Auckland market.

"Towards noon we again entered our canoes on our return, and descended the Mangatawhiri, the navigable channel of which is so narrow that even our narrow craft could with difficulty make its way. Gradually the hills began to slope backwards, and the river to grow wider, till it expanded on either side into a swampy morass covered with reeds and lofty

elegant water-plants, while at a short distance away we could descry magnificent trees springing from the high-lying but fertile soil. It was a most delightful day. Throughout our entire excursion the thermometer ranged from 71° 6 Fahr. to 77° Fahr., so that, our strength not exhausted by oppressive heat, and our attention not distracted by the hum or the sting of insects, we were free to indulge those mingled feelings of which the variety and magnificence of the landscape were so well calculated to elicit the manifestation. Presently the river became once more very narrow, the hills again closed in, covered with a thick belt of forest, which extended down to the water's edge, occasionally forming a canopy of indescribable grace above our boat, as she glided noiselessly below. At last the Mangatawhiri, which hitherto had pursued a westerly direction, made a bend to the southward, and debouched into the Waikato. The impression made upon each of our party by the scenery at this point was so overpowering, that all, as though smitten by one common impulse, broke into expressions of delight. Its course lying between mountains of magnificent outline and thickly wooded, the majestic stream presented many points of resemblance to the Rhine and Danube, to which it was little if at all inferior in point of width. A holy calm brooded over its clear brown ripples, only broken by the flight of birds from time to time, which in those undisturbed solitudes, far from the murderous weapons of man, passed their existence in happy security. That we might enjoy in all their plenitude the exquisite charm of the

forest and its luxuriant vegetation, we coasted along now on this side, now on that, as though we could never weary of the mingled grandeur and beauty of this magic scene. Still further to enhance the magnificence of nature in her present mood, a tremendous thunder-storm broke over us in the course of the afternoon, when the forked lightning played like arrows of fire above our heads, and the thunder rolled in deafening peals, which were taken up again and again by hundreds of mountain echoes.

"In the evening the sky cleared, and we reached the Maori village of Tuakan, where we were made welcome, and the best hut in the place assigned us. The evening was one of peculiar interest, it being that of Sylvester's day, or the eve of the New Year of 1859, which will scarcely soon again be spent by Austrians at the antipodes. Our entire party camped upon the floor of the hut, two torches, stuck into the mouth of a couple of empty bottles, shed an uncertain light, while an iron kettle served as punch-bowl, in which a "brew," something resembling "Punch," was, by dint of the joint experience of the English and German members of the excursion, compounded out of the spirits we had brought with us. Ere long the chorus went round, and we had German songs, alternating with English, Irish, and Scotch melodies, and even melancholy New Zealand love-songs, sung by some of the Maories present.

"As the evening, and with it the dying year, wore on, some little difficulty, natural enough under the circumstances, arose,

how to ascertain the precise moment of its departure, as most of those present had left their watches behind, as a something more than superfluous article in the course of a forest excursion, and the few which had been brought differed so much, that it was impossible to depend upon them for the correct moment at which the old year sank to his rest, and the new began his course of alternate hopes and alarms, joys and griefs.

"Suddenly Captain Drummond Hay rose, and opening the door, which, as in most Maori huts, faced the south, exclaimed: 'Well, we have neither church clock nor night watch to tell us the exact moment when the year changes, but a bountiful Providence has suspended for us in yonder firmament another and an unerring sentinel of night and time:—the constellation of the Southern Cross! During how many sleepless nights, among the forest or fern-covered plains of New Zealand, have I lain gazing at that never-failing time-piece of the Almighty's own handiwork! See, the Cross begins to bend to the west! It must now be midnight. A happy new year to one and all!' Once more the glasses clinked against each other, and hand locked in hand, after which the shades of night were left to gather round our wearied party, who sunk into sound repose, relieved probably by many a cheering vision of distant friends.

"The following morning, 1st January, 1859, we all rose early, refreshed for the day's work, and found the entire population of the village collected around us. There were also a

couple of English carpenters who joined the crowd, and welcomed us to the interior. They were employed in constructing for the natives, at an expense of £400, a wooden chapel, as the Maories attach great importance to having a place of worship, where those resident on the spot, or any occasional European stranger, may unite with them in spending the sabbath in a becoming manner. The majority of the New Zealanders are Christians, and belong almost exclusively to the High Church of England. Service is performed partly by missionaries, who traverse the country up and down, partly by itinerant spiritual teachers, regularly engaged for the purpose, the latter of whom have occasionally to struggle against severe privations and obstacles of various kinds. Many natives educated by the missionaries travel through the country preaching and praying, and by their exemplary conduct must greatly influence their fellow-countrymen. In almost every hut in the village we found a Bible, or a hymn-book and prayer-book, in the Maori tongue.

"Notwithstanding their undoubted capacity, the natives will not apply themselves to any handicraft pursuits, which indeed they attach so little value to that they regard the shoemaker and the tailor, for example, as inferior to them. On the other hand, the merchant or the seaman stands in high esteem; and the warrior holds the chief place in their estimation, while they themselves consider them not inferior to the Europeans, with respect to courage, firmness, and love of war.

"About noon we set out on our return. The route chalked

out for us, by the only road which exists between Tuakan and Drury, was constructed partly by the land-holders along its course, partly by the surveyors, only intended for cattle, and to facilitate survey. We found it in such a rude state that it was only with much trouble we got our horses over the trees which lay felled across the road, or could induce them to put a foot on the bridges of loose planks by which the water-courses were crossed. In every direction the path was over-grown with roots, between deep pools, into which one stepped over the knees, while the boughs of the trees overhead rendered any attempt at progress a matter of considerable difficulty.

"We could now form a pretty correct estimate of 'life in the interior of New Zealand,' and of the obstacles the settler has to encounter in a climate, the vegetation of which grows in rank luxuriance almost rivalling that of the tropics. As, however, the Colonial Government attaches the utmost importance to this matter, and expends large sums in laying out good roads throughout the interior, many of the impediments to traffic at present existing will be obviated in a few years. About 9 P.M. we were once more in Drury, and on the following morning, 2nd January, 1859, the little party returned to Auckland, when the geologist of the Expedition made a comprehensive report to Government on the coal-fields of the Drury district, which had first been noticed by the Rev. Mr. Purchas of Onehunga, who employed his leisure in geological studies."

According to the geological researches of Dr. Hochstetter, it would appear that the province of Auckland abounds in good coal that would repay working, especially a brown coal occurring in the tertiary period, which greatly resembles that of Bohemia and Styria. The plains of Papakura and Drury on the eastern shore of Manukau Harbour are part of a rolling country, and are but little above the level of the sea. S.E. and S. they are bounded by a thickly-wooded range of hills from 1000 to 1500 feet in height, running in a direction from S.W. to N.E., or from the Waikato to the Wairoa; it is only in the vicinity of Drury that a portion of this chain trends nearly N.E., rising with a gentle slope from the level land below. At various points on these acclivities strata of coal have been discovered partly by the action of water, partly by human labour, the extent of which, owing to the impenetrable forest vegetation and the consequent lack of natural indications, can only be ascertained by boring.

The coal is of the best quality of that kind of brown coal generally called cannel coal, and is occasionally met with in immense seams. The average thickness of the seam is about six feet. The Drury and Hunua coal-fields seem indeed to be but a part of a far more extensive tertiary formation, which occurs pretty universally throughout the province of Auckland. The obvious practical value and commercial importance of this New Zealand coal can only however be definitely proved, when the various manufacturing processes in

which it is used have been fairly set a-going. It might at all events be worth the experiment to erect in the vicinity of the coal mines some manufactories of porcelain, as the utmost variety of clay has been met with in the course of the different borings, all admirably suitable for every branch of that manufacture.

In like manner the brown coal might be made available for the supply of gas, besides being called into requisition for fuel for numerous industrial pursuits. On the other hand, it is not suitable for ocean steam navigation, as its volume would prevent its being shipped in sufficient quantities, so long as black coal could be procured, even at a somewhat higher price.

The proposals of the geologist of our Expedition as to the best mode of exploring the wealth of the Drury coal district, were so well received by the Government, and so eagerly caught up by the proprietors of the various plots of land—the benefits likely to result to the colony from such an undertaking seemed so important, that there was not merely a rush to open up the coal district, but a formal request was made to the Commander of our Expedition that he would permit Dr. Hochstetter to remain behind to aid the work, and prosecute further researches in this little explored island. This proposition, originated by a number of respectable and influential persons, at last found official expression in an official letter despatched by the Governor of the colony to our Commodore, in which the further geological exploration of the

island by Dr. Hochstetter was asked as a particular favour.* As the request was a high compliment, and it was impossible the scientific objects of the Expedition could be more obviously fulfilled than by the thorough geological examination of a country never hitherto subjected to a similar scrutiny, Commodore Von Wüllerstorff consented on condition that all the collections made, and the observations and literary matter published, by Dr. Hochstetter during his residence on the island, should without exception form part of the results of the *Novara* Expedition, and that all expenses incurred during his stay on the island, or on his passage back to Europe, should be defrayed by the Government of New Zealand.†

All these proposals were at once approved, and Dr. Hochstetter was moreover handsomely remunerated, and every facility given him to devote himself to the extension of science while contributing to the welfare of the country at large. On the 8th January, our estimable travelling companion disembarked from the *Novara*, intending to remain in Auckland provisionally, and to make preparations for his arduous task, which was to be inaugurated by a geological survey of Auckland Province, after which, in the course of some weeks, he hoped to proceed into the interior. Several officials, as also a photographer, a draughtsman, and 15 Maories, were selected to accompany Dr. Hochstetter into the interior, each of whom strove to contribute to the utmost

* See Appendix III. † See Appendix IV.

of their power to the success of an undertaking fraught with such important results.

During our stay in Auckland we had the misfortune to lose our boatswain, who died suddenly of serous apoplexy, and was interred in the Catholic burial-ground. The deceased was so universally beloved, that a collection was started on board, which resulted in a sufficient sum being raised to admit of a suitable tombstone being erected to the memory of this worthy man.

In no part visited by the *Novara* was she received by the Catholic clergy with such lively demonstrations of delight as at Auckland. On new year's day a special high mass was celebrated in the Catholic cathedral in presence of all the seamen of the vessel, followed by a sermon from Dr. Pompallier, the venerable R. C. bishop of the province. The gray-headed prince of the Church, accompanied by his Vicar-General, and several Maori chiefs, afterwards came off to the frigate, when he paid a visit to the Commodore. As the Catholic mission at Auckland is anything but well endowed, our chaplain, by orders of the Commodore and in the name of H. I.-R. M. the Emperor, presented various altar furniture and vessels for the celebration of mass, which were accepted with many expressions of gratitude and delight.

For several days a continuance of heavy gales from the northward prevented the departure of the frigate, which gave our friends in Auckland a further opportunity of renewing their warm-hearted hospitality. During this delay, we also

shipped as part of the crew two Maories, who at the last moment declared their wish to accompany us. The official correspondence on this subject between the Colonial Government and the Commodore is especially interesting as illustrating the watchful care taken by the New Zealand authorities in protecting the interests of the Maories. The most favourable terms were sought to be secured for them, and a special clause was inserted providing for their return to their native country free of expense, should they express a wish to that effect at the conclusion of our voyage. At first four Maories and a half-blood had resolved on making the voyage, but when the time for embarkation came, only two adhered to their determination, Wiremu Toe-toe Tumohe, and Te Hemara Rerehau Paraone, both of Ngatiapakura, and belonging to the powerful Waikato tribe. Toe-toe, himself a chief of two small tribes of Ngatiapakura and Ngatiwakohike, about 32 years old when he shipped with us, had been baptized at 15 by the English missionaries, by whom he had been instructed in reading and writing. He had also been trained to agricultural pursuits, and at 20 he married the *mestiza* daughter of an Englishman and Maori woman, who had presented him with a son. In his 26th year he entered the service of the Colonial Government as post messenger, in which capacity he proved himself so useful that he had been for two years postmaster of his district, which position he still filled when the *Novara* arrived. Toe-toe was the first to display his willingness to assist Government in constructing

roads, and by his influence and example not alone induced several chiefs to abstain from interposing obstacles in the way of that much-needed improvement, but even prevailed upon several of his relatives to take a part in their construction. His determination to accompany the *Novara* was solely the result of a long-cherished desire to see foreign lands and races. Hemara Rerehau Paraone was fired with a similar wish. He was the son of a wealthy relative of Toe-toe, and had been baptized at an early age. From 12 to 18 he had frequented a school founded by the English missionaries, where he learned to write his mother tongue, and a little English, arithmetic, geography, and history, besides the accomplishments of sowing, corn-growing, grinding flour, and baking bread.*

* These two Maories, who at first were very much depressed, soon got reconciled to their new sphere, and by their excellent conduct and obliging disposition, presently became great favourites among the crew. Only during our rough passage round the Horn, the tremendous storms and the unaccustomed severity of the cold caused them great uneasiness; they thought, as they themselves said, that "they must have died then;" and great were their longings for their native country. When at last they arrived safely and in excellent health at Trieste, they travelled to Vienna in company with one of the members of the Expedition, where, through the kindness of Privy Councillor von Auer, they entered into the Imperial-Royal Printing House, and were also instructed in the most important and interesting particulars of European civilization. Mr. Zimmerl, a member of that Institution, who had made the Maori idiom a special study, taught them English and German, as well as the manipulation of types and lithography, besides copper-plate engraving and drawing from nature. So intelligent and anxious for improvement did they prove themselves to be, that the Imperial Government were requested by the Directors of the State Printing Office to present the two Maories on their return to their native country with the necessary implements to enable them to avail themselves at home of the knowledge they acquired under such creditable circumstances. During their nine months' stay in Vienna, they were made acquainted with all the "lions" of the

At last, on 8th January, the frigate left the harbour of Auckland. Just as the sails were let fall, some boats made their appearance crowded with friends, who presented us with a last bouquet, ere we went on our way. There was also a boat with several natives, and the Vicar-General, who wished to saddle us with some wonderfully tattooed Catholic Maories, anxious apparently that Protestant Maories should not alone be shipped. The zealous father brought with him a letter from the Catholic Bishop, Pompallier, and was so intent upon his mission that despite the somewhat rapid

metropolis, and all the manners and customs of European civilized life. Of all the numerous sights that must have astonished their unaccustomed senses, there was none that seemed to have made a more powerful impression than the Railway, "the most splendid evidence of the powers of the foreigners, compared with which all others are unimportant, and which they earnestly trust will soon be introduced into New Zealand." The culmination of their visit to Vienna consisted in a visit they paid to their Majesties in the Imperial Palace, by whom they were received with the most gracious consideration, and orders issued that they should receive a handsome present, and have their return to their native country defrayed at the Government cost. On 26th May, 1860, the two New Zealanders quitted Vienna, and travelled through Germany to London, where they stayed several weeks, were presented to the Queen, and embarked at Southampton for Auckland direct. They arrived in safety at home, and have since then repeatedly written to their friends and associates in Vienna. The style of these epistles is in the highly figurative style peculiar to New Zealand. They abound in repetitions, and are not very inventive in rounding their sentences or giving their impressions, though they occasionally surprise the reader by the tenderness and poetic fervour of their thoughts. Thus, for example, Toe-toe writes once from Vienna to one of the Expedition resident at Trieste: "Thou art at Trieste, on the sea-shore! We climbed the Leopold Berg,—thence to descry the clouds which floated over Styria. Trieste we could not see, for our eyes were veiled by the tears which flowed from them!" The news we have received of Toe-toe since have been rather distressing. He issues from the press, presented to him at Vienna, stirring publications, comparing the Maories to Pharaoh (?) and exciting them to declare their independence!

rate at which the frigate was now cleaving the water, and the difficulty which his long black cloak interposed to his movements, he would not let go his hold, but held on to the Jacob's ladder in order to get personal speech with the Commodore. It was, however, obviously impossible to grant his request without further delaying the departure of the frigate, and the poor Vicar-general, a warm-hearted Irishman, had to make his way down the slippery ladder again into his little boat, and return with his *protégés* to Auckland, his praiseworthy object unaccomplished.

As, favoured by fair winds, we sped gaily along to the next object of our travels, the Island of Tahiti, our thoughts and wishes were repeatedly reverting to New Zealand, where one of our number had remained behind, to undertake the solution of so difficult but important a problem. The information obtained by our colleague during his eight months' residence only came to hand long after the frigate had been safely laid up in ordinary in Trieste harbour. However, in order to show more fully the activity displayed in surveying this little-explored England, we avail ourselves of the following condensed narrative of his labours, drawn up by Dr Hochstetter himself.

"My first field of employment was the province of Auckland. The ample assistance placed at my disposal by J. Williamson, Esq., the very deserving superintendent of Auckland, enabled me within the short space of five months to travel over the greater part of this province, which consti-

tutes nearly the whole of the northern island, while pursuing my researches for the most part upon a definite plan.

"During the first two months, January and February, Auckland was my head-quarters, as the season was not yet suitable for pedestrian excursions in the interior. The heat during the summer months is so great, and the annoyance caused by the mosquitoes, who during those months frequent the forest in millions, is so intolerable, that travelling becomes all but impracticable. Neither of these drawbacks exists to any great degree in the vicinity of Auckland. The fresh sea-breezes, which continually blow across the isthmus, temper the summer heats, and the environs being cleared of forest are but little infested by those blood-thirsty insects.

"I accordingly applied myself next to those works which during the stay of the *Novara* had been set on foot by myself among the brown-coal-fields near the capital, and adjoining the remarkable volcanic formations of Auckland, with the view of getting some definite result, in order that I might provide for myself a detailed geological sketch of the volcanic district, since even the portion in close vicinity to the capital, notwithstanding the previous labours of my friend Mr. Heaphy, was, so far as regarded geological formation, as much a *terra incognita* as the interior itself.

"The basis of such a geological chart of the Auckland district was conveniently supplied by some topographical plottings on the scale of one inch to the mile, with which I was provided by the Surveyor-general's office. Unfortun-

ately, these sketches almost entirely omitted any notice of the description of land surveyed, and, in fact, comprised merely the outline of the coast and the net-work of the rivers, so that it became necessary to examine for myself the physical features of the country.

"On a closer examination, the variety of geological formation proved to be much greater than I had at all anticipated. What chiefly took up my time was the investigation of the remarkable extinct volcanic caves of the Isthmus of Auckland, which, so far as regards the great number comprised within a small space, and the peculiarities of their cave and crater configuration as modifying the lava streams, must be pronounced unique of their kind. Within a circuit of only ten miles from Auckland I had to mark down 61 different points of eruption! An excursion southwards to Manukau Harbour, and the mouth of the Waikato westward, led to our finding important petrifactions at the south source of the Waikato, and along the west coast to the discovery of belemnites and fossil ferns in excellent preservation. Thus for the first time the secondary strata of New Zealand were bared to view. Further excursions to the Drury and Papakina districts, as also to the Wairoa River, were rewarded by the confirmation of the extension thither of the brown-coal formation, after which I extended my investigation northwards to the Waitakeri, and the peninsula of Wangaparoa.

"My map, so far as completed, and sent to the Colonial Government for their use and to be copied, embraced by the

end of February the whole of the environs of Auckland for a distance of 20 miles. It brought to light a district abounding in most important and remarkable geological features, besides a stratum of sedimentary deposit of all the geological periods (primary, secondary, tertiary, and diluvial), including numerous volcanic phenomena. My collections however embraced a quantity of splendid petrifactions, and an immense number of interesting rocks, while the botanical and zoological collections were greatly added to through the kind assistance of well-wishers of all degrees of the community.

"The question now to be solved was, 'Should I make the northern or the southern portion of the province the scenes of further exploration?' Properly to examine both was impossible within the short period I could remain. I did not hesitate to decide in favour of the southern district, and that for a variety of reasons. The southern portion of the province is inhabited almost exclusively by natives. Only missionaries, tourists, and a few Government officials had hitherto traversed these interesting regions. The north of the island, on the other hand, is much better known. Numbers of European settlers inhabit the shores of the numerous bays of the northern Peninsula. The colonists themselves, by word of mouth, or written information, could furnish me with all the information I required respecting the natural history of those regions, not to speak of the specimens that were constantly being sent me.

"Dieffenbach had already visited every point of im-

portance in the north, which he had very fully described in all other essentials, if not geologically. The renowned American geologist, Dana, when attached to the great expedition despatched by the United States to the Southern Ocean,* landed at the Bay of Islands, the most important harbour in the north, and had given full geological details of that neighbourhood. Moreover, my friends, the Rev. A. G. Purchas and C. Heaphy, Esq., during my stay in the country, visited several districts in the north, whence they brought me collections and specimens of every kind, so that I was by no means unacquainted with the north. On the other hand, the broad interior of the southern part of the province seemed to me to be almost entirely unexplored. Since Dieffenbach's remarkable voyage in 1840, no naturalist had visited the remarkable volcanic peaks of the interior, the beautiful inland lakes, the boiling springs, the Solfataras and Fumaroles. The geological information respecting these conveyed by Dieffenbach's narrative of travel, seemed to me very meagre, while topographically the interior was a blank. Accordingly, a visit to it seemed to promise the most important results.

"Towards the end of February all necessary preparations had been made; Capt. Drummond Hay, well known as one of the best Maori scholars, was commissioned by Government to lay out my route and act as interpreter. The Government,

* Commanded by Captain Wilkes, recently so notorious by his conduct with reference to the English mail-steamer *Trent*, in Nov. 1861.

however, forestalled my utmost wish by furnishing me with a photographist, as well as an assistant to aid me in meteorological observations, and generally to make himself useful in collecting and sketching. The latter was a young German, M. Koch, who proved himself a most invaluable ally, while M. Hamel took charge of the photography. There were also an attendant, a cook, and fifteen natives, to transport baggage.

"I was likewise accompanied by my friend Mr Haast, who had but recently come to New Zealand, sent out by some mercantile firm in London to explore the country for colonizing purposes. On the 6th March I set out with my numerous company, intending to proceed first from Auckland to Mangatawhiri on the Waikato, the chief river of New Zealand that flows from the interior. Crossing the Waikato in a native canoe, and afterwards its tributary the Waipa, I directed my steps westward from the Mission Station on the last-named river in the direction of Whaingarva, Aotea, and Kawhia, on the west coast. From Kawhia I struck landwards towards the upper course of the Waipa, as far as the Mokan district. Thence, after crossing frequent mountain-chains thickly wooded, I reached the source of the Wanganui in the Tuhua district, and on 14th April arrived at the majestic Lake Taupo, surrounded on every side by the most magnificent volcanic caves. Here I was at the very heart of the country, at the foot of the still smoking volcano of Tongariro, and its extinct neighbour Ruapahu, 9200 feet high, and covered with perpetual snow. At the

southern extremity of the lake is a mission-house, where I received a most hospitable welcome, while my Maories received at the hands of Te Heukeu, the great Maori chief, a most cordial reception, in conformity with the excellent customs of the country. After I had laid out the chart of the lake, and examined the springs along its banks, I followed up the Waikato by its outlet from the lake, till I reached the very singular chain of boiling springs, Solfatare, salt-springs and Fumaroles, which extend in a N.E. direction between the active crater of Tongariro and the still active volcano of Whakari or White Island on the east coast. On a longer stay, the country adjoining the sea along the prolongation of this line furnishes the site at Lakes Rotorua, Rotoiti, and Rotomahana (or Hot lake), for the *Ngawhas* and *Puias*, i. e. boiling springs and geysers with siliceous sinter-deposits, as in Iceland, which there display their greatest activity. I look upon this locality as presenting the most remarkable and extensive chain of hot-springs in the world, Iceland itself not excepted.

"By the first week in May we gained the east coast at Maketu, whence we kept along the coast as far as Tauranga harbour, and thence once more turned our faces towards the interior at the Wai Ho valley, or valley of the New Zealand Thames, and thus once more reached the Waikato at Maungatautari. I now wandered through the fertile plains of the central Waikato basin, to Rangiawhia, the central point of the Maori settlements, paid a visit to the Maori

king, Potatau te Wherowhero, at his residence, Ngaruawahia, at the confluence of the Waikato and Waipah, and so by the end of May reached Auckland from the Waikato, by way of Mangatawhiri.

"The results of this expedition, of almost three months' duration, were most satisfactory to myself. The weather had been singularly favourable, so that I found no insurmountable obstacles, although our route led through districts difficult of approach, owing to the frequent recurrence of flood, swamp, and almost impervious primeval forest. As my travels were undertaken about the period of the New Zealand harvest time, both of the potato and corn crops, there was no lack of provisions. At the various missionary stations scattered throughout this region we received the most heartfelt hospitality, and even the native chiefs did not fail to receive into their tents, and welcome in right hearty fashion, the Te Ratu Hokiteta, as I was named in the Maori tongue, with all his numerous train. My Maories had proved themselves so willing and obliging, as well as cheerful, over the work, and my friends Haast, Hay, Hamel, and Koch, had so zealously co-operated with me, that the results achieved were quite beyond my most sanguine expectations. I now had complete geographical, geological, botanical, and zoological materials in my hands, nor was there any lack even of ethnographical specimens.

"My chief object had been to obtain a correct notion of the geography and geology of the country. In order to be

in a position to make geological deductions, I had at the same time to get up the topography, for all that was set down in the maps of the interior had not been taken from regular hydrographic data, but were mere jottings, which had been laid down from the hasty and necessarily imperfect sketches which travelling missionaries, public officers, and other casual travellers had brought with them. The imperfect charts which the Colonial Government had supplied me with, to guide me in pushing to the eastward, only gave the inhabited points along the coast, and even a few miles distant from Auckland were so much waste paper. To remedy this I had recourse, from the very commencement, to a system of triangulation, by means of an Azimuth compass, based upon the nautical survey of the coast made by Capt. Drury, which I prosecuted, with the invaluable assistance of Capt. Drummond Hay, from the west coast to the east. The natives, who, in their profound distrust of the government land speculations, always threw every possible obstacle in the way of the land-surveyors and provincial engineers, so soon as they made their appearance, theodolite in hand, on any land not yet purchased, never once disturbed us. They knew I was a stranger, who was only going to stay a few months in the country, and accordingly made it a point of honour that I should carry home with me as high an opinion as possible of the country. At every remarkable point the chiefs stationed guides, and accompanied me to the summits of the mountains, whence I made my observations, and with great readiness

furnished me with the name of every hill and stream visible, as well as the valleys and lakes within sight, and explained in their own way the geography of the district. On my side I collected carefully all the information I could glean respecting the natives, and in this fashion I believe I have rescued from oblivion a number of beautiful and highly-characteristic names. The configuration of the soil I always sketched off on the spot, and thus brought away from my tour materials sufficient to enable me to prepare during my stay in Auckland a topographical chart of the southern part of the island on a large scale, reserving for more mature consideration, at a future day, the preparation of a carefully revised edition of this provisional map.

"The barometrical observations made during this tour were reduced by comparison with those of the Royal Engineer's Observatory at Auckland, the tables used in which were obligingly put at my disposal by Colonel Thorold, R.E.

"There are also to be noticed an immense number of drawings and photographs, taken during the Expedition, as also some very valuable landscape sketches, made for me by Mr Heaphy.

"There still remained, however, a most interesting object for examination in the vicinity of Auckland, namely, the Cape Colville peninsula on the eastern shores of Hauraki Bay. The discovery of gold in Coromandel Harbour on this coast, had some years before created great excitement. I devoted a few days of fine weather in the month of June to

visiting these gold-fields; a projected visit to the copper-mines of Great Barrier Island, and the Island of Kawau, had unfortunately to be abandoned, owing to bad weather.

"With this, the period of my stay at Auckland was drawing to a close. At the request of the members of the Mechanics' Institute, I delivered on the 24th June, shortly before my departure, a lecture in the hall of the society, upon the geological capabilities of the province, in which I threw together the chief results of my investigations, and illustrated them by means of roughly-executed charts, plans, sketches, and photographs. As I had neither time nor complete material for a more extended report, it was on this lecture that Government relied for an account of my various operations. The arrangement and careful packing of the collections, and the drawing the maps, delayed my departure for some weeks, and after my days of labour followed others, still more impossible to forget, of agreeable society and festive meetings, ere I could tear myself away from the inhabitants of Auckland. Thousands of mementos of New Zealand were thrust into my hands. My collections comprised treasures of all sorts, such as must for ever engrave on my memory the forests and mountains of New Zealand. But I had yet again to thank the good people of Auckland for a last souvenir of their kindly feeling and generosity to myself. On the 24th July I was invited to a banquet in the name of the province, at which I was presented, in terms far too

flattering, with an address,* accompanied by an elegant and valuable testimonial.

"Unfortunately, owing to want of time, I could not respond to the cordial invitation extended to me to make a lengthened stay, accompanied by further surveys of Wellington and New Plymouth (Province of Taranaki), and Ahuhiri (Province of Hawke's Bay). So, too, I was compelled gratefully to decline a kind invitation from the Governor to accompany him on an expedition to the Southern Island, on board H. M.'s frigate *Iris*, preferring to accept a previous invitation from the Superintendent of the Province of Nelson, as a visit to Middle Island seemed of special importance, however short my stay. It not alone satisfied me of the justice of the name assigned to Nelson, of being the 'Garden of New Zealand,' but also kept me fully occupied in examining its variety of mineral treasures, such as copper, gold, coal, &c., which have made the province the chief mineral and metalliferous district of New Zealand. And how was it possible for me to come back to Europe without having seen the splendid chain of the Southern Alps, and their summits crowned with perpetual snow?

"Accordingly, on 28th July, I embarked on board the steamer *Lord Ashley*, bound for Cook's Straits. The voyage gave me the opportunity, as the vessel called at Nelson and Wellington both (anchoring at the latter), before entering

* See Appendix V.

Blind Bay, of paying a flying visit to both those localities. Thus, on 30th of July I had a splendid view of the lofty Taranaki mountain (Mount Egmont), 8270 feet high, and was enabled to study, among the sugar-loaf rocks of the Taranaki coast, the peculiarities of the trachytic lava of this the most regular in shape of the volcanic peaks of New Zealand. After a stormy passage through Cook's Straits, we landed on 1st August at Wellington, and reached Nelson on the 3rd.

"I was received in the most cordial manner by the denizens of Nelson, who, while the *Novara* lay at anchor at Auckland, had extended to the members of the Expedition a most cordial invitation.

"The provincial Government, under the advice of the excellent superintendent, J. P. Robinson, Esq., had already issued the requisite instructions to enable me to make the utmost possible use of the time at my disposal for geological survey, and had chartered for me the steamer *Tasmanian Maid*, so as to enable me to visit with all possible dispatch the most important formations on the shores of Blind and Golden Bays.

"The geological field which is opened up on the Middle Island, was entirely new as compared with the Northern Island. In the neighbourhood of Nelson, the Southern Alps send off outliers, in the shape of mountain-chains, 5000 and 6000 feet high, covered in winter with deep snow, as far as Cook's Straits. The western chains are composed of primary

crystalline rocks, granite, gneiss, micaceous and hornblend slate, quartz, and clay slate, whereas sedimentary sand-stone, chalk, and almost vertical stratifications, constitute the chief formations observable in the eastern chain. Between these older formations, however, among the valleys and depressions, occur later stratifications, including brown-coal or peat.

"A succession of splendid weather was gladly hailed as an evidence of the renowned climate of Nelson, and my very first excursions opened to me such interesting subjects of inquiry, that I was fain to decide on prolonging till September the month's visit I had originally determined on restricting myself to. I was thus enabled to examine more minutely the various gold and coal fields near Nelson, as also the copper mines on the Dun Mountains, and at all events to represent on a chart the geological features of the northern part of the province.

"The results of the investigations into the mineral wealth of this province were on the whole eminently favourable. I could not indeed confirm the sanguine anticipations of some mining speculators, of the inexhaustible, though as yet unrevealed, treasures of copper in the Dun Mountains, although, adjoining the rather meagre copper-bearing strata, there were instances of abundance of chromate of iron, which promised a considerable return. Above all, however, there still remained to be visited the gold-fields of the Aorere and Tetakaka valleys at Golden Bay, the quantity already extracted from which, as well as its purity, satisfied me that capital might se-

cure a splendid return here by a more extended and systematic mode of working, and that the discovery of this, the first of the New Zealand gold-fields, is but the commencement of a series of such along the range of hills which traverses the Middle Island; discoveries which, though perhaps not on so extensive a scale as those of Australia and California, must nevertheless tend to raise higher and higher the rank of New Zealand among the gold-producing countries of the earth. Lastly, it was found that in the province of Nelson, side by side with the ordinary strata in which the brown-coal occurs in North Island, were beds of coal of a very superior quality. The excellent but unfortunately very limited coal-fields of Pakaivau give ground for anticipating that in other localities it may very probably be possible to discover larger and more easily-worked beds, and my friend Haast has, in fact, since my visit discovered such on Buller-and-Grey river, on the Western shore of the province of Nelson.

"During my stay in Nelson my collections waxed in amount to an unusual degree. In vain had I attempted while in North Island to discover remains of the gigantic extinct bird of New Zealand, or the bones of the *Dinornis* and *Palapteryx*, Moa of the natives. These researches met with far greater success in Middle Island. The chalk valleys of the Aorere valley furnished us with splendid specimens of these singular and rare remains of birds. Not merely were individual bones daily discovered, through the indefatigable exertions of my friend Haast, but from time to time entire

skeletons more or less perfect. Besides these, I was presented with a very valuable complete skeleton of the *Palapteryx ingens* (Owen), from the Nelson Museum, so that the collection of remains * of the Moa, which I brought back with me to Vienna, is scarcely, if at all, inferior to the valuable series of relics of an extinct race of birds which at present adorns the British Museum.

"I must express my thankful sense of the kindness with which my friends Dr. Monro, Capt. Rough Travers, Messrs. Adams, Curtis, and many others, contributed minerals, plants, and zoological specimens to the enrichment of my collections of natural history. I am also deeply indebted to Messrs. Campbell and Burnett for several exquisite landscape sketches, and the Provincial Government for a variety of interesting photographic pictures of the environs of Nelson.

"It was with regret I tore myself from a region where so much remained to discover, and so much hitherto unexamined to explore. In the higher and more remote regions of the Southern Alps, never yet trodden by human foot, there was nothing left for me to do. From the shores of the Rotoito lake (Lake Arthur) I could see the southernmost point reached by me, where the lofty pinnacles of the southern range, crowned with perpetual snow, rose grandly before me. I could but picture to myself the majesty and sublimity of those hills, which my friend and travelling companion, J.

* Of this wonderful bird a cast was moulded in gypsum, and has been sent to the great International Exhibition, 1862.

Haast, succeeded in ascending in 1860—61, after indescribable difficulties and hardships, which redounded to the credit of German 'pluck' and perseverance, as the results did honour to German science.

"My time had now been stretched to its utmost limit, and I had to prepare for my return to Europe. In a lecture upon the geology of the province, which I delivered at Nelson on 29th September, I presented in a succinct form the results of my observations. An extract from this lecture, accompanied by a copy of my geological map, I presented to the Provincial Government of Nelson and the Colonial Government of Auckland.

"I cannot conclude without recording the numerous instances of consideration and unexpected kindness which I received at the hands of the inhabitants of Nelson, and especially for their flattering and gratifying appreciation of my labours, which at the close of the lecture already mentioned took the form of an address,* accompanied by an elegant and appropriate souvenir, consisting of a beautifully-finished cabinet, composed of the various coloured woods of New Zealand.

"On 2nd October, 1859, I embarked for Sydney, on board the steamer *Prince Alfred*. After a short sojourn in the capital of New South Wales, I went on to Melbourne, whence I visited the most important of the gold-fields of the colony

* See Appendix.

of Victoria, and by the middle of November returned viâ Mauritius and the Red Sea to Europe."

Such is the account given by our geologist of his proceedings while the *Novara* was steering homewards. The voyage to the Society Islands Archipelago promised at first to be very speedy, but ere long was seriously delayed by strong contrary winds, and while, on the one hand, we could make but short tacks, we had on the other not merely to forego the pleasure of clear sunny weather, but had the miserable prospect of nothing but squalls and rain. Our additions to our natural history collections were likewise very scanty, and even our most important capture, a shark 10 feet 4 inches in length, and weighing 174 lbs., was much more of a treat to the sailors than an acquisition to science.

The only circumstance throughout the voyage which made a certain impression was the passage of the meridian of 180°, about 11 P.M., on the 10th of January, so that we had now entered upon W. longitude again. Accordingly, there was no small astonishment among the sailors, when a day seemed suddenly to be dropped out of our reckoning, and orders were issued that Monday, 10th January, should be entered twice in all journals and reckonings, that is, should be entered for that and the following day also, so as to prevent our returning to Europe with the log one day ahead of the calendar. Of course a little explanation soon satisfied all landsmen of

the necessity of the alteration, but their amazement reminds me of the dismay of earlier Catholic navigators, when they found they had been keeping irregular fast days. Thus, when the first circumnavigation of the globe was made by Magelhaen, who sailed in the *San Lucas de Barrameda* on 20th September, 1519, he found on his return, after a three years' cruise, to Santiago, one of the Cape De Verd Islands, that the Portuguese there were keeping Thursday, the 10th July, 1522, whereas his log marked Wednesday, the 9th, he having doubled the Horn and sailed from east to west. The idea of having lost a day of their lives disquieted the worthy and pious mariners far less than the fact that they had observed Lady-day erroneously, and had eaten meat on fast days! On their return to Spain they could not get credit for the lost day, which was set down to an error in reckoning, the meaning being that they had omitted the intercalary day in February, 1520. Peter Martyr spoke concerning this to the renowned Venetian ambassador, Contarini, who at once pointed out that a day must necessarily be lost in the course steered by the *Victoria*, while, on the other hand, a day would have been gained by sailing from W. to E. One consequence of this proof of the sphericity of the earth was, that it at once became obviously necessary to draw a line of demarcation between the Spanish and Portuguese settlements. Thus, too, Captain Steen Bille relates, that when he sailed from Tahiti he logged his departure as on Friday, 18th December, whereas on the adjacent island of Borra-Borra they were

already reckoning it the 19th. The mode of reckoning at Tahiti corresponded with his own, but only, it would seem, in consequence of an alteration which had been made a few weeks previously. In short, the mode of reckoning time among the South Sea Archipelagoes depends solely upon whether they have been approached in the first instance from the west or the east by the navigator who has introduced among them the Christian Calendar. However, so long as the discrepancy is not too great, a conventional mode of computation is employed, and one general epoch is used for all groups of islands in or near the meridian of 180°. In any case, it is a matter of indifference to the brown natives of these island groups whether or not they correspond with Greenwich at a given hour of a given day.

On 4th February the look-out man at the mast-head sung out "Land on the lee-bow!" This proved to be the small island of Tubuai, of the Rorutu Archipelago, the inhabitants of which at present seem to be likewise under the "careful" protection of France.

At length, on 11th February, we came in sight of Tahiti and the outlying Island of Eimeo or Mórea, after which we tacked towards the latter, which we approached so closely that we could quite plainly distinguish its singular serrated outline, its precipitous crags, and its crater-like depressions, as well as the thick, gloomy forests that clothe its secluded valleys. Many of these pinnacles and steep rocky declivities presented all the appearance of a series of colossal ruins of

cities and palaces, protected by towers, battlements, and embrasures. About 4 P. M. we hove to off Papeete. The entrance into this harbour, surrounded by coral reefs which indeed form the haven, is exceedingly narrow, the fair way for the frigate not exceeding half a cable's length. As no pilot boat was visible, a blank shot was fired, and a certain signal hoisted, upon which a small boat pulled off with the long-looked for pilot. At 6 P. M. we cast anchor in 11 fathoms water, in clay ground. In the harbour were three whalers, a French transport, and the dispatch steamer *Milan*, which had left Sydney twelve days before us, had remained three days at New Caledonia, whence it had been 54 days on the voyage to Papeete, only making use of its steam in the most urgent cases. We ran up the flag of the French Protectorate at the main-mast-head, and saluted the city with the customary 21 guns, which were replied to by a field battery, which had to be brought down to the beach for the purpose. Much astonishment was expressed that we should have ventured to run the frigate through the narrow channel between Eimeo and Tahiti, which has a very bad repute, and is very rarely attempted by vessels of large size, but, as we ourselves experienced, is perfectly practicable with a favourable wind, and greatly shortens the approach to the harbour.

With the consent of the Governor, who received us with much cordiality (no intelligence having as yet reached these waters of the diplomatic misunderstandings which at our

antipodes were forming the prologue as it were of the war that broke out somewhat later), we were permitted to use the islet of Motu Uta, lying in the harbour, for the purpose of carrying on, free from interruption, our astronomical, meteorological, and magnetic observations. A simple wooden hut which we found upon the island served for an observatory, while quantities of slender-stemmed cocoa-palms, waving their rustling green canopies overhead, invited us to welcome repose after the exhaustion of the day's labour. To this smiling islet, which rose in the midst of the bay like a basket of flowers, King Pomáre II. once retired, there to translate the Holy Scriptures into Tahitian. Here, too—probably in the very hut which now served us as an observatory—it was that the same sovereign, when old, spent whole days, and occasionally, according to tradition, indulged so freely in cognac that he was frequently heard, when in that state, to say to himself, "Pomáre, Pomáre! thy *puan* (pig) were now better fitted to reign than thou!"

XX

Tahiti.

Duration of Stay from 11th to 28th January, 1859.

State of the island at the close of last century.—The London Missionary Society and its emissaries.—Great mortality among the native population.—First arrival of Catholic Priests in Oceania.—French Protectorate and its consequences.—The Tahitian Parliament and Tahitian debaters.—William Howe.—Adam Kulczycki.—Scientific aims and achievements.—The Catholic mission.—*Pré Catalan* and native dances.—Prisoners of war from New Caledonia.—Point Venus.—Guava-fields.—The fort of Fautáua.—Lake Waiiria.—Popular *Fête* at Faáa.—Ball given by the Governor.—Queen Pomáre.—Geographical notes on Tahiti and Eimeo.—Climate.—Vegetation.—The Kawa root, and the intoxicating drink produced from it.—Great expense of the French Stations in Oceania.—Projects of reform.—Results of English and French colonization.—Two convicts.—Departure.—The Whaler *Emily Morgan*.—Attempt to fix the zero point of magnetic declination.—"Colique végétale."—A victim.—Pitcairn Island.—A fire-side tale of the tropical world.—An accident without ill results.—Humboldt's Current.—Arrival at Valparaiso.

Of all the innumerable islands of the vast Pacific, there is none which at various periods has attracted the attention and aroused the interest of the civilized world in the same degree as that in whose harbour we were now lying at an-

chor. At first it was the inimitable grace of Cook's narrative of his stay in Otaheite,* and the simplicity and felicity of its inhabitants, that left a deep and permanent impression on the mind of the educated reader; in after-times occurrences of a political nature riveted the sympathy of Europe upon this distant island and its queen.

Before entering upon a description of the present condition of Tahiti we may be permitted to cast a hasty retrospect as to the state of the group when the first English missionaries arrived on the Society Islands.

It was in March, 1797, about 18 months after the foundation of the Missionary Society in London, that eighteen ministers of the everlasting gospel landed in Tahiti, with their wives and children, from the renowned ship *Duff*. This small community dispersed itself among the various islands, and had to make head against obstacles of unwonted magnitude during a series of years. At length, about 1803, shortly after the death of King Pomáre I., who had raised himself from the position of a mere chief to the sovereignty of

* The original spelling of the name of this island arose from ignorance of the language. To the question, "*Eaha tera fenúa?*" (What is the name of this island?) the natives replied, "*O Tüïti Oia.*" The article was thus taken for the first syllable and the island was called *O Taheite*. Since then the thorough knowledge we have acquired of the language has rectified the mistake. In Tahitian the two verbs "to be" and "to have" are altogether wanting. *O* is simply the nominative of an article which very frequently is placed before a proper name to give it emphasis, or even for the sake of euphony. *O* accordingly is used in the above sentence merely to imply "it is." A literal translation from Tahitian into any European language is in most cases impossible. Occasionally one finds Tahiti mentioned by the names of *La Sagittaria, King George the Third's Island, Nouvelle Cythère,* and *Amat.*

the island,* Christianity began to take root and spread abroad through the country. In 1812 Pomáre II., the eldest son and successor of Otu, declared himself of the Christian faith. Five years later a further accession of missionaries arrived in a merchantman from New South Wales, who, among other things, brought with them a small printing press. Then for the first time the natives of the Society Islands learned to comprehend the blessedness of the greatest discovery of all time. On 30th June, 1817, after much preliminary instruction by the missionaries, the first proof of a catechism was struck off by King Pomáre II. In the course of the same year there were issued from the missionary press at Papeete 2300 copies of a little alphabet book.

It was the same ship that brought the first horse to the island, a present from the owner of the vessel to King Pomáre. The natives could not conceal their amazement when they saw the captain astride of the splendid animal. Very striking was the remark made by King Pomáre on the occasion: "King George of England," said he, "rides on a horse; but King Pomáre, a yet mightier king, sits at public solemnities upon the neck of one of his subjects!"

The labours of the missionaries were crowned with the

* The derivation of the name Pomáre, which has since become that of the Tahitian dynasty, is purely accidental. The father of Otu was once travelling among the mountains, and had to camp out in the open air. The bad weather gave him a violent cold with hoarseness, which induced one of his companions to name the night spent in such discomfort *Po-mare*, i. e. a night (po) of cough (mare). The chieftain so acutely felt the pertinency of this name that he adopted it as his *own* name.—(Vide *Ellis, Polynesian Researches*, vol. ii. p. 70.)

most splendid success. To them is due the merit of having abolished the hideous custom of human sacrifice, of having introduced law and order into the native administration, and of having extirpated various odious vices from their social habits. By their representatives, King Pomáre II. was induced to prohibit all distilleries and places where the kawa-drink was fabricated. Schools and chapels were erected, Bibles and spelling-books were printed and disseminated, till within ten years not alone did all the natives profess Christianity, but the majority of the younger population had learned to read and write.

The cheering spiritual influence exercised by these Protestant missionaries over the aborigines was not unfortunately accompanied by a simultaneous elevation of their physical condition. In consequence of early debauchery and the spread of diseases of a certain class, which appear to be the inevitable concomitants of the first contact of the white man with primitive races, there has been a marked falling off among the population. It almost seems as though the Tahitians had attained the utmost pitch of their civilization, and thence, in obedience to a mysterious natural law, have been compelled, like so many other coloured races, to surrender this lovely abode to a more energetic and self-developing race, till the appalling doom befalls them of being erased from the list of nations!

Thirty-nine years had elapsed since the first missionary had set foot in Tahiti, and Christianity had spread

far and wide, before the first Catholic priest appeared in Oceania.

Etienne Rochouse, a young priest of the so-called association of Picpus, founded at Paris in 1814, had been named "Vicar Apostolic of Eastern Oceania," with title of Bishop of Nelopolis *in partibus*, and about the close of 1833 embarked at Bordeaux with four missionaries * bound for Valparaiso, where the holy brethren arrived on 13th May, 1834. Their design was, wherever practicable, to forestal the Protestant missionaries in their zeal for conversion among the tribes of the South Sea Islands, whence they might diffuse themselves over the neighbouring countries, and thus gradually introduce themselves among the remotest populations, in the hope "that all, whom heresy has led astray and brought under its iron yoke, may be freely brought under the mild and gentle yoke of Catholic doctrine." †

In 1836, the catechist Columban Murphy was dispatched to the Sandwich Islands, with instructions to stop at Tahiti on his way, and to make on the spot all possible inquiries as to the probable prospects of establishing a Catholic mission there. This was the first representative of the Romish Church that had visited Tahiti during the thirty-nine years this island was evangelized; and, carried away by the blind religious fanaticism which in former centuries led the Span-

* These four missionaries were named Chrysostome Liansu, François d'Assis Caret, Honoré Laval, and Columban Murphy, an Irish catechist.

† Vide Annales de la Propagation de la Foi, No. xli. p. 31.

ish monks so lamentably astray, Murphy believed that "hell itself must have been moved and puzzled by such an event!" * Murphy, or Columban, as he now called himself, travelled as a working carpenter, wore a thick beard, smoked a "cutty" pipe, and might have been taken for anything else under the sun than a Catholic priest. Although serious misgivings were felt by the native authorities as to his real quality, he nevertheless received permission to settle upon the island. He accordingly spent a couple of months here, and laboured with great zeal to pave the way for a Catholic settlement at a future period. In November of the same year, two more missionaries, Fathers Caret and Laval, came on to Tahiti. The circumstances under which they arrived aroused the suspicions of the authorities and of the entire population. For they did not land at Wilks's Harbour, at that time the only accessible harbour on the island, but secretly, on the opposite side. According to the law of the country, however, no captain or owner of a ship was permitted to land a passenger without having previously obtained the permission of the Queen or Governor of the island. After the two Catholic priests had gone the round of the island and had visited nearly all the native villages along the coast, they at last came to Wilks's Harbour, now Papeete, where they received a

* "It is not surprising," he writes in a letter to his superiors, "that on the arrival in this country, so long given over to the evil spirit of a child of the *Sacré cœur* (Divine heart), that enemy of all which is good should have raged with redoubled fury, and that the Protestant emissaries should have believed I came to overthrow their empire!!"—Vide *Annales de la Propagation de la Foi*, No. lvi. p. 204.

most cordial welcome from a Belgian settler, the then American consul, Mr. Moehrenhout.

In the course of an interview which Laval and Caret had with the Queen, they remarked that they had only come to teach the word of God, and presented the youthful and at that period pretty-looking Queen Pomáre with a silk shawl. The Queen did not however seem disposed to accede to their wishes, but ordered the laws of the country to be read before them. The priests however declined listening to them, and took their departure.

A notification was hereupon conveyed to the two strangers that the Queen could not permit them to stay any longer upon the island, and a similar intimation was made to Mr. Moehrenhout. As the schooner which had brought Laval and Caret was preparing to set sail again, the opportunity was seized to dismiss them by the same conveyance which had landed them. They, meanwhile, had blockaded themselves in a house, to which they refused all admission. The schooner thereupon was detained for twenty-four hours, and the Queen's officers surrounded the house, awaiting the moment when the two missionaries were to leave the place. They never made their appearance however. Ultimately the officers of the law were compelled to tear off the roof from the house, while others, forcibly seizing the priests, conveyed them with their paraphernalia on board the schooner, which at once made sail, and carried them back to Gambier Island, whence they had last come. Notwithstanding the

ill-success of this first venture, Pater Caret made his appearance off Tahiti a second time seven weeks later, on board of an American brig, accompanied on this occasion by another priest, Father Maigrat. The captain of the brig, a man named Williams, wrote the Queen a letter requesting permission to land his two passengers. The answer was a firm refusal, and so continued, despite the repeated representations of the captain, as also of the above-mentioned M. Moerenhout. Upon this the captain went to work in true Yankee fashion with the view of landing the two Catholic missionaries by force on the island, but had to give way before the prudent but decided attitude of resistance adopted by the natives, who crowded down to the water's edge and prevented the boats from landing. This last attempt to carry matters with a high hand having failed, the captain set sail and carried off with him the two missionaries.

France, though no longer openly claiming the specific character of a Catholic monarchy as in the days of Louis XIV., but, on the contrary, proclaiming herself, by her laws at least, a free state for all forms of religious worship, apparently thought herself compelled to interfere in this quarrel, with all the weight of a great European power, two of whose subjects had been treated with unmerited indignity. Accordingly in September, 1838, the French frigate *Venus*, commanded by Commodore Du Petit-Thouars, appeared off Tahiti to demand satisfaction for the ill-treatment of the French missionaries Laval and Caret, which they assessed at

2000 Spanish piastres. At the same time a treaty was concluded between the French Government and Queen Pomáre, by which from that time all subjects of the King of France were to be at liberty to visit and reside in the Society Islands without molestation, and were to enjoy similar privileges with the English.*

To this treaty the French captain, La Place, who, in April, 1839, anchored in Papeete harbour for repairs to his frigate, the *Artémise*, added another article, which was countersigned by the Queen and the principal chiefs, and authorized the free celebration of the rites of the Catholic religion.†

Had these demonstrations on the part of France had for the sole object the protection of the interests of Catholicism and French subjects, no civilized power could have objected to an act which, in entire consonance with the more humane and enlightened spirit of the 19th century, asserted the equal rights of every form of religious worship.

But she was not content with removing obstacles or asserting rights; political aims, as it proved, were being advanced under cover of a struggle on behalf of the Catholic Church;

* "I am," wrote Queen Pomáre, to the then King Louis Philippe, "only the ruler of a small, insignificant island. May wisdom, renown, and power ever attend your Majesty! Cease then your anger, and pardon the error I have committed."

† This additional article ran as follows: "The free exercise of the Catholic religion is permitted in the Island of Tahiti, and in all the other possessions of Queen Pomáre. The French Catholics shall enjoy all the privileges accorded to the Protestants, *but they shall nevertheless not be entitled to meddle, under any pretext, in the religious affairs of the country.* Done at Tahiti, 20th June, 1839."

and the events which speedily ensued are but a series of acts of violence and humiliations inflicted, so entirely unjustifiable, that even the French Government found itself in the end compelled to disapprove and condemn the acts of its representatives in Oceania.

In September, 1842, M. Du Petit-Thouars came on a second visit to Tahiti. He had by this time been promoted to his flag, and had been appointed Captain-general of the French stations in the Southern Ocean. He had already taken possession of the Marquesas Islands in the name of France, and appeared to have come to Tahiti with similar intentions. This second visit terminated after the Queen and her subjects had been submitted to the most cruel humiliations, in the establishment of a French protectorate, which several chiefs demanded in a document addressed by them to Louis Philippe, and which the Queen was compelled to subscribe. In November, 1843, Du Petit-Thouars came once more to Papeete, and now took possession of the entire island, on the flimsy pretext that an intentional insult had been given to France, in the shape of a flag which he saw waving above the Queen's residence, and which he mistook for that of England! The Tahitian flag was forcibly struck by the French soldiers, and replaced by that of France, while Tahiti itself was declared a French colony. Queen Pomáre protested against this new high-handed insult; she wrote a letter of complaint to the French monarch, relating the extravagances of his officers, and in a dignified and

simple address, implored the sympathy and support of Queen Victoria.*

The violent proceedings of the admiral were not endorsed by the Government of Louis Philippe, which recalled Du Petit-Thouars, and restored to Queen Pomáre the islands of Tahiti and Eimeo, but the French protectorate remained unaltered, since which the two islands have remained, if not *de jure*, at all events *de facto*, a French colony. The administration is vested in the hands of a proportionately increased staff of French officials, and import and export duties are levied by the French authorities, while the Queen herself receives her civil list of £1000 at the hands of the "Trésorier et payeur des Etablissements français en Océanie."†

* These two letters are dated, "Waiáu, on the Island of Raiatea, 24th Sept. 1844," whither Queen Pomáre had withdrawn after the events of November, 1843, and whence she only returned to Tahiti in 1847.

† According to the laws of the country, each married resident contributes one franc per annum to the civil list; a widower with one child, one franc; a widower without children, two francs; an unmarried adult, two francs; an adult female unmarried, one franc; boys under sixteen, and girls under fourteen, as also criminals and persons incapacitated for labour, pay nothing. This is the only direct tax the inhabitants are called upon to pay. The revenues of the island do not, however, suffice to defray the expenses of the French occupation. Before the arrival of the Europeans the Tahitians had no description of currency, but had recourse in all business transactions to barter. The Protestant missionaries were the first to introduce about £2000 of copper money, which they had got struck in England for the purpose. This currency was based upon a coin of the value of one half-penny. On one side was a ship, and on the obverse the words "COPPER PREFERABLE TO PAPER." When the French came to the island they flung this money into the sea, and forbade their circulation under heavy penalties! At present the only coins used are francs and *réra* (about one-third of a franc=3¼*d.* nearly).

Papeete or Papéïti (*Pape*, water, *Iti*, little), which derives its name from a rivulet which falls into the sea here, lies at the bottom of a semi-circular bay, seven miles west of Point Venus, the northernmost spot of the island. It is the chief town on the island, the residence of the Queen, and the seat of government, all which is not incompatible with its being of very limited dimensions, not rising above the grandeur of an ordinary village. The dwellings of the Europeans, constructed for the most part of wood, covered with palm leaves, partly extend along the shore, partly help to make pretty regular streets, amid which rise up on every side bread-fruit trees, cocoa-palms, and orange-trees, which make up in cheerfulness for any deficiency in stateliness of aspect. Southwards of the bay lie a belt of police barracks, the Protestant place of worship (*Fare-pure*, house of prayer), and the prison (*Fare-auri*, house of iron); eastward it is bounded by the promontory of Fare-Ute, forming a sort of dock-yard, where ships of 300 tons can be repaired. Not far from the place of disembarkation, and near the centre of the township, rises one of the most elegant buildings in Papeete, namely, that where the various stores for the troops are housed. The mansion of the Governor closely adjoins the residence assigned to the Queen, from which it is only separated by a garden hedge. Both are extremely simple and unpretending edifices, built of wood, and impress the visitor much less than another large quadrangular building, built of stone in the Oriental style, and surmounted by a cupola—this is the

Fare-Aporaa, or "House of Big Words," which has numerous congeners among more civilized communities. Here, for the future, are to be held the sessions of the Legislative Assembly, and here the laws of the country are to be debated. Ever since the protecting hand of the French Protector has extended itself likewise over the unfortunate inhabitants of the Society Islands, the Tahitian parliament is opened with all that pomp and tinsel splendour which your true Frenchman cannot dispense with, even among the primitive islands of the Pacific. The Queen, accompanied by the Governor, proceeds, escorted by a long retinue, to the Chamber, and opens the assembly in person, which solemnity is announced to the gaping crowd outside by a salvo of twenty-one guns. The French Governor, however, plays the most conspicuous part, as in him is vested the right of deciding whether the convocation of the chosen of the people be requisite or not. Hence it happens that many a year passes when it does not suit the wishes of the Governor that parliament should meet. On such occasions (such was the case while we were there) the Governor promulgates a simple edict to that effect.*

* This State paper is couched in very brief and intelligible terms in both French and Tahitian, and runs as follows:—

"Her Majesty, the Queen of the Society Islands, and H. E. the Governor of the French possessions in Eastern Oceania:—

"1st. Considering that there are no 'projets de loi" (Bills) to be submitted for legislative enactment during 1859, and that assembly has further no budget to vote;

"2nd. Considering moreover the considerable expenses to which the members of the said assembly are put for their sojourn at Papeete during its session;

"3rd. Considering Article 7 of the Ordinance of 23th April, 1847;

"Decide,—

The Tahitians, long before the arrival of the French, had a code or charter of their own. The last was drawn up in 1823 by the Protestant missionaries, upon the model of that of England, and was revised in 1826. Its provisions were that the throne should be inherited by either male or female descendants of the reigning dynasty. By it the island was divided into seven districts; the legislative power was vested in an assembly of fourteen members, viz. two from each district, who were to be re-elected every three years by the people. This constitution underwent divers mutilations at the hands of the French Protectorate, till it had lost all importance. At present, however, it is the subject of lively debate, and the Tahitian parliament at Papeete can reckon some really distinguished speakers; but its solution depends much less upon the conviction of logic than the influence of the French officials.

We heard a very remarkable speech from Ravaai, one of the most gifted of the native orators, on the occasion of a debate as to whether a law should be passed admitting beer and French wines, duty free, into the island. Several speakers were of opinion, considering the terrible spread among both sexes of drunkenness, with all its attendant evils,

"The Legislative Assembly of the States of the Protectorate will not meet in session during the year 1859. Papeete, 10th February, 1859.

(Signed) "Saisset."

A similar notification drawn up in Tahitian, is countersigned by Queen Pomáre. One Tahitian, who was a member of the Legislative Assembly, remarked to us, after reading the foregoing announcement in the *Moniteur Tahitian*, "How then can any one say beforehand whether or no there are no important questions to discuss?"

that every description of spirituous liquor should be prohibited to be sold to the natives; Ravaai, on the other hand, spoke in favour of the enactment, and in the course of his speech remarked: "If the use of spirituous liquors were in itself criminal, as some persons maintain, we should not see it in every-day use by the Europeans living amongst us, our pioneers in the path of civilization. It is only excess, abuse, that are punishable. This we must expect to have to punish, but do not rob us of an inherent right by a sumptuary and unnatural prohibition. Your declarations concerning murder, incendiarism, ruffianism, all which you adduce as the results of the use of brandy, are but oratorical flourishes: spirituous liquors, the misuse of which I equally with yourselves deprecate, have, no doubt, produced disorders, but these have been suppressed, and if our island had no further ills to encounter we might rejoice this day over a future of such prosperity and promise! Such, unfortunately, is *not* the case! People tell us of murders and robberies! Go the round of the island! go from Mahaéna to Punaruu, from Papenoo to Taapua, and a variety of other places—climb the mountain to the very summit of Fautáua; ask at these abodes of sorrow, baptized with noble blood, and covered with honoured graves! Say what has filled the graves of Mahaéna with human bones? Is it the unlimited use of spirits, or is it not rather the ignorance begotten of fanaticism run mad, which disloyally put weapons into your hands? But the graves are dumb; and certain persons present may at this moment

rejoice at that repose. If it is your wish sincerely, and with hope of definite results, to forbid the sale of intoxicating stimulants in Tahiti, begin by forbidding those mighty nations who trade with our island, and are interested in this traffic, from bringing and introducing the destroying liquids in their vessels!! But your voices, ye unhappy Tahitians, are too feeble to make themselves heard in England, in France, in Spain, in America! Well, then, renounce it, deny yourselves!" The law was passed by ninety-five votes against thirteen, and, in consequence, not merely French wines, but all sorts of liquors, may be sold in Tahiti unchecked by license. The penalties for drunkenness have since then formed an important source of revenue!

Among the foreigners settled in Papeete our Expedition had reason to be especially thankful to Mr. W. Howe, member of the London Missionary Society, and M. Adam Kulczycki,* director of the administration of native matters, two gentlemen, of whom the former has, during a residence of twenty-two years in Tahiti, employed in spreading the gospel and raising the morals and religious standard of his little flock, proved himself as useful a servant, as the latter by his valuable contributions to our knowledge of the physical condition of the island. Dr. Nadaud, botanist and physician, also laid

* M. Adam Kulczycki, who was at that period entrusted with the management of native affairs, and is an accomplished Tahitian scholar, besides occupying himself with astronomical and meteorological observations, and geological investigations, has been for seventeen years in the French service, and, a Pole by birth, served not without distinction in the struggles of his native land for liberty.

the Expedition under deep obligations by the cordiality with which he placed himself at the disposal of the naturalists, to accompany them on their various excursions, and imparting to them his own valuable experience, while the splendid and comprehensive work of Dr. G. Cuzent* upon Tahiti, contributed greatly to assist our personal impressions, experiences, and observations. Mr. Howe, the sole English missionary now resident in Tahiti, received us with much kindness, and escorted us through the various missionary buildings, in which, unfortunately, the spiritual energy of bygone years has dwindled away under the baleful French Protectorate. The institute for the education of teachers and pastors is quite closed,—in the printing establishment, which formerly kept ten compositors and two iron hand-presses in constant employment, only small religious tracts are now permitted to be sold, and these exclusively in Tahitian, a work which one man can easily get through. In the missionary library we saw several interesting works and manuscripts, mostly of a religious cast. One was shown us which seemed to be highly esteemed, and consisted of a thick manuscript treating of Tahiti, the author of which was a Mr. Orsmond, the oldest Protestant missionary upon the island, who died in 1857. It is said that M. Moerenhout, the former Belgian and American consul at Papeete, in his work upon Tahiti, availed

* "*O Taïti (Tahiti), par G. Cuzent, Pharmacien de la Marine, &c. &c. Paris, Librairie de Victor Masson*, 1861." It is a most valuable book, the result for the most part of personal examination and illustration, and arranged with much care and method.

himself largely of this manuscript, which has also been translated into Swedish.

Mr. Howe spoke highly of the liberality of the present Governor, M. Saisset, as compared with the intolerance displayed by his predecessors, with respect to celebrating Protestant worship. Then, he told us, he was not permitted to preach elsewhere than in his chapel, and then only in English, whereas now he can perform religious service in other districts whenever the natives request him to do so. Moreover, in the dissemination of religious tracts and books of prayer, there is much more relaxation than formerly, and during the last tour of inspection of the Governor, that gentleman himself took with him 500 copies of a translation of the Bible, for distribution among the Protestant natives of the districts he was about to visit. The want of elementary religious books in the interior was so great, that even Catholic teachers had to sue for some, preferring Protestant Bibles to having none at all.

Although Mr. Howe is the only one of the fourteen missionaries once resident here to whom permission was accorded to remain behind on the island, there are nevertheless a great number of native teachers who preach and celebrate worship on the Sunday. The *Canakas*,* as it is the custom to call the natives, on such occasions bring with them to the chapel their Bibles and little hymn-books in a small

* *Canaka*, in the Tahitian dialect, as in that of the Sandwich Islands, is equivalent to MAN.

case made of plaited palm fibre, a modern department of Tahitian industry, and, in the interior more especially, observe the Sabbath with much strictness.* It may be reckoned that by far the larger number of the inhabitants of Tahiti and Eimeo, or Morea, profess Protestantism, whereas the number of native Catholics does not exceed 100 in both islands. Notwithstanding the numerous advantages which the Catholic Church has enjoyed since the establishment of the French Protectorate, it has not succeeded in acquiring any great influence among the natives, or in enlarging its boundaries. The Bishop, Monseigneur Tépaud Jansen, Bishop of Axieri, who resides at Papeete, is also the sole priest and teacher in the colony. This spiritual guide has every day to celebrate mass in his wretched little chapel of bamboo walls and palm thatch, and has never yet succeeded in getting the half-ruined church close by finished for his reception; the 8000 francs per annum (£320) paid by Government as long as the church is being built seem rather to postpone than hasten its erection. Moreover, there is not as yet any public school in Papeete, a want which is the more sensibly felt and the more permanent in its effects, as the majority of the Protestant schools are closed, and consequently a large proportion of the rising generation † are growing up in utter

* At one service which we attended in Mr. Howe's chapel there were fifty "communicants" present; a pupil of the missionary played the organ. The Queen, too, and her family, who are strongly attached to the services of the Evangelical Church, are frequently present at these Sunday gatherings.

† Several of the girls who live in Mr. Howe's family are Catholics, whose parents prefer they should be educated in a Protestant school rather than not at all.

ignorance. In four districts in the interior out of thirty-three, live two or three French missionaries who instruct the natives in French. There is neither lack of energy among these zealous labourers, nor of the requisite funds,* to extend the field of their labours, so that if the Catholic mission in Tahiti makes no progress, and after twenty years' exertion can only reckon 100 neophytes, the explanation must be sought in the existence of conditions, which neither the self-denying zeal of Catholic missionaries nor material protection can affect.†

While in the interior of the island Sunday is thus observed with much strictness, there is great indifference, if not worse, in its observance in the seaport; indeed, it is the French official who sets the example of disregarding it. For no-

* The cost of the Catholic missions in Eastern Oceania amounts on the average to frs. 100,000 (£4000) per annum. "The Society for the Propagation of the Faith" (French) subscribes annually from frs. 3,000,000 to 4,000,000 (£120,000 to £160,000) for the races of heathendom. Of this Oceania and Australia get from frs. 400,000 to frs. 500,000 (£16,000 to £20,000).

† With reference to this, the following remarks are especially noteworthy, made by M. Guizot at a time when France still possessed a tribune and a parliament: "What particularly strikes me is that our missionaries do not make new conquests for a Church already powerful; that they do not extend the sphere of supremacy of the ecclesiastical government. The Roman Catholic missionary arrives alone, ignorant of the actual state of affairs, having none of the affections common to humanity—in a word, better fitted to acquire an ascendant than to enlist sympathy. The Protestant ministers are, on the contrary, family missions, so to speak; so that a pagan population will more readily be led to regard as brothers men who are husbands and fathers like themselves. Thus these missions instruct by presenting specimens of Christian society side by side with precepts of faith; the example of all the relations and sentiments of domestic life, regulated according to the morality of the Gospel they are sent to teach; a mode of instruction most assuredly not the least efficacious, if not absolutely perfect." (Discours de M. Guizot dans l'Assemblée Générale, du 11 Avril, 1826.)

where does one witness more utter shamelessness than at what is known as the Pré Catalan, a lawn-like meadow, which extends directly in front of the Governor's palace, and, in fact, is one of its dependencies. Here, in presence of the French gens d'armes and soldiers, under the very eyes of the Protectorate authorities, and in entire defiance of the native laws,* dances of the most dissolute kind are executed by half-drunk Tahitian girls. One must have seen the Upa-Upa danced by these lascivious Tahitians, with all the impassioned vehemence of a sensual nature, in order to comprehend the mingled shame and indignation with which it fills any but a French by-stander. Singularly enough, the Upa-Upa, or Hiva, has a marked resemblance to the well-known Can-can, as it is, or used formerly to be, danced in the Quartier Latin at the Chaumière, by the students and grisettes, with the sole difference that in the Upa-Upa the grace of the Parisian dances is entirely lost sight of, so that there remains nothing but a series of obscene gestures, most unblushingly presented. The musicians sitting on the ground strike with the flat of the hand a little kettle-drum

* In the "*Lois Revisées dans l'Assemblée Législative au mois de Mars de l'année* 1848, *pour la conduite de tous, sous le gouvernement du Protectorat dans les terres de la Société*," is the following stringent passage, "The dance, known as Upa-Upa, is interdicted in the islands under the Protectorate. On fête days and public festivals dancing is permitted, but no indecent gestures will be tolerated." The Upa-Upa dates from the period when the secret society of the Arréois, whose chief tenets were drinking feasts, polygamy, and infanticide, existed over the greater part of the islands of the Pacific. Moerenhout, in his "*Voyages aux îles du grand Océan*" (Paris, 1837, vol. i. p. 484), gives a very complete account of this singular society, which has since entirely disappeared before the zeal of Protestant missionaries.

(*pehu*), and beat time as well with their feet. Suddenly, a dancer of either sex springs into the inclosure, goes through a number of extraordinary animated movements, which are the louder laughed at and applauded in proportion to their indecency, after which he or she mingles once more with the crowd, exhausted and breathless.

The Tahiti women have almost invariably beautiful black hair, and singularly small hands and feet. Their figure is on the average that of the middle stature of European women. Their dress is simple, but very clean and neat. They wear a long white gown with plaits, which gives them somewhat the appearance of vestals, and wear a coronal of flowers on their head, or entwine the flaming blossoms of the *Hibiscus rosasinensis* in their thick black tresses. The more coquettish also affect an exceedingly elegant head-dress (*rewarewa*), which they make of the young tender leaves of the cocoa-palm, the satin-paper-like epidermis being converted by the manipulation of their skilful hands into an exquisitely fine-wove, rustling tissue, which they arrange among their luxuriant locks with genuine idealistic grace.

The men, like the women, are tall, slim, and well-proportioned. The face usually is far from ugly, and betokens no little intelligence; the lips are full, the complexion a yellowish-brown, but on the whole fairer than that of the New Zealanders. The occipital region of the head seems to be artificially flattened, the forehead well-formed, the chin and lower maxillary bones are broad. Some wear European

clothing, others a wide piece of blue calico (*paréu*), wound round the loins and reaching to the knees.

The dancing in the Pré Catalan continued from afternoon till far on in the night, although only a faint gleam of light shone on the green floor, so that the darkness threw a convenient veil over both dancers and spectators. Quite close to the crowd of pleasure-seeking natives was a group of natives of New Caledonia. These had been made prisoners of war during the recent campaign of the French on that island, and had been transported hither to undergo a term of *travaux forcés* on the public works. On the whole, however, they were kindly enough treated, and on Sundays were permitted to "dance," such as the performance was, in the presence of their custodian. On our presenting them with a few small silver coins they went through their most renowned national dances for us, which are much ruder and more natural than those of the Tahitians, but apparently are not of so frivolous a character as the Upa-Upa, and other similar cancanized contortions of the limbs as indulged at Tahiti. The New Caledonians arranged themselves with spears and sticks in a circle, rushed violently at each other, leaped impetuously about in a state of artificial excitement, uttering the most singular sounds and the most appalling yells, then dispersed and reunited repeatedly, the leader of the dance all the while muttering very fast, but in perfect time, some unintelligible words, apparently to fire their ardour by recalling to them the memory of some national

victory. The obscene Tahitian dances on the Sundays in Government gardens had been resuscitated five months before, and for this reason Pré Catalan, the only public promenade in Tahiti, is avoided by the Europeans resident in Papeete. The Protestants feel themselves sorely aggrieved by having such a spectacle openly sanctioned on the Lord's Day by the French authorities, and a collection having been set on foot about the time of our visit for raising sufficient to maintain a permanent band of music, a number of Protestants and missionaries declined to subscribe, on the ground of disapproving of money being expended in promoting such amusements.

Among the excursions made by the members of the Expedition, a double interest attached to that made to Point Venus. It was on this promontory that Captain Cook first made the astronomical observations by which he determined the position of the island. The ride thither lay through delicious groves of cocoa-palms and bread-fruit trees, mingled here and there with citron and orange trees, as also bananas and guavas. Near the Point lies the village of Matavai, inhabited by several white settlers, each in his little cottage with its blooming garden around it. The tree-like *Oleander* and the beautiful red flower *Hibiscus rosasinensis* towered above in full bloom, the entire scene being almost sufficient to captivate a European. The native governor of the district is a pretty well educated man, who has spent nine months in Paris, and on the occasion of the capture by the French of the fort of

Fautáua had been rewarded for his not very patriotic services by the cross of the Legion of Honour, besides being appointed chief of the militia. His farm is very nicely managed, and his daughters, elegant, well-mannered brunettes, speak a little French, an accomplishment in which the Tahitian ladies, notwithstanding their intimate relations with the sons of "*la grande nation*," are usually entirely deficient. At Point Venus is a light-house, with an intermittent light, visible about 14 miles seaward, in charge of an aged French veteran (*invalide*). The tamarind tree is still pointed out, which Captain Cook planted close to the spot where he completed those renowned labours, which still single him out as the greatest of Pacific discoverers.

With the exception of those to Point Venus on one side, and to the large villages of Faáa and Papeuriri in the opposite direction, there are no practicable roads on the island. On the whole, there are about 36 miles of road suitable for wheeled carriages,—all travels beyond must be performed on horseback, by which means the entire island can be traversed in a few days. One of the most agreeable excursions, and which well repays the trouble, is undoubtedly a drive to the beautifully situate hill-fort of Fautáua, renowned in the annals of the island. The first part of the road leads over unsightly fields of guava (*Psidium guava*), first imported from South America in 1815 by an American missionary, with the laudable object of increasing the number of useful plants upon the island, but which has since so entirely overgrown

large tracts of land, that its systematic extirpation begins to be discussed. Wherever the guava takes root it destroys all other vegetation. It has already extended over the loveliest spots, where its seeds have been dropped in human or animal excrement. Its apple-shaped fruit, red-fleshed inside, is in the raw state anything but pleasant to the taste, and is not readily eaten even by the natives, but a sort of jelly prepared of it could be made an important article of export, as it is already along the west coast of South America. The fruit is also valuable for provender, as animals foddered with it speedily get quite fat, while its wood, growing with great rapidity, is in much request for fuel.

After riding a few miles through these guava fields, we were astonished at finding a sugar plantation close by the road, which here ran through a lovely little valley. This is the property of an Englishman named Johnson, who, once a whaler, and afterwards a sandal-wood trader, has resided for more than thirty years in Tahiti, and has married a native woman. Johnson, in partnership with a Frenchman named Le Rouge, had planted 23 acres of land with sugar-cane, and when we saw him in February, 1859, expected a crop of from 100 to 110 hogsheads of sugar. The whole property is a perfect model farm, and receives every encouragement and assistance from Government, with the view of extending sugar-planting.*

* Experiments have also been made quite recently with coffee, which the Government likewise fosters. The largest plantation is the property of a Frenchman named Bonnefin, who, in 1859, grew as much as 8000 lbs. The high price of labour, however, renders its production so dear that Tahitian coffee costs 100 fr. (£4) the centum

Immediately adjoining the plantation, the river Fautáua flows past, here about five feet deep, and furnishing a most excellent bathing-place. Johnson, like many another, lamented the appalling rapidity with which the native population was falling off, which he ascribed to the daily increasing prevalence of the vices of drunkenness and debauchery. He related to us how many valleys, now lonely and abandoned, were pretty densely peopled only twenty years ago! Then the population was estimated at 15,000, now it is only 5000.*

The aspect of the sugar plantation is remarkably fine, and an occasional glimpse of the surrounding hills, bathed in the sunlight, imparts a sublimity that at once arrests the attention, the crags rising in close proximity, and appearing much more precipitous and inaccessible than they are in reality. The Diadem (the name given to several peaks which have a striking resemblance to a crown) displays itself from this point in all its wondrous loveliness, above which tower lofty mountain-peaks, 6000 or 7000 feet in height, which have never been trodden by the foot of the naturalist.

(100 lbs), or about ten pence the pound, on the spot, whereas the best Costa Rica coffee costs only from £2 to £2 8*s.* the centum, or five pence to six pence the pound. The Protectorate officials hope to supply this very perceptible lack of labour by introducing into Tahiti, as field workers, the prisoners of war they take in New Caledonia.

* Mr. Wilson, a missionary, estimated the population of Tahiti in 1797 at 16,000 souls. In 1848, when the French administration took its first census, the native population amounted to 8082 (viz. 4466 males, 3616 females), the number of Europeans being 475 (428 males and 47 females). In 1858 it had fallen to 5988, or 2580 fewer than it had been 30 years before (1829), when, according to a census taken by the English missionaries, the population of Tahiti was 8568 of both sexes and all ages.

Close behind the hospitable dwelling of Mr. Johnson begins the primitive forest, under the delightful cool shades of which one can ride almost to the goal of the excursion, surrounded on every side by luxuriant green canopies that seem to scale the very clouds, under whose domes play grateful currents of air.*

The path, although always a steep ascent, was in very fair condition; only at the point where it was necessary to ford the river Fautáua, which every year swells into an angry torrent during the rainy season, did we find any serious impediment to our further advance. The bridge across the stream had been swept away, and there was nothing for it but to lead the horses through the water, an achievement of no little difficulty and waste of time, owing to the strength of the current and the terror and obstinacy of some of our horses.

After a ride of several hours in a sort of green twilight, the forest began to open, and there before our astonished gaze was the most important waterfall on the island, imparting an inconceivable freshness and animation to the landscape around. The Fautáua makes at this point a leap of about 200 metres

* Among the splendid specimens of the forest flora of Tahiti we remarked, in addition to the cocoa-nut palm, the bread-fruit tree and Pandanus, of which we shall presently speak more at length, on account of their economic, industrial, and therapeutic qualities. The *Calophyllum Inophyllum* (Ati), *Inocarpus edulis* (Masse), *Aleurites triloba* (Tu-tui), *Rhus Taïtense* (Apape), *Ficus tinctoria* (Máti), *Ficus prolixa* (Ora), *Gleichenia Hermanni* (Eanúhe), *Hibiscus tiliaceus* (Puráu or Fáo), *Lagenaria vulgaris* (Hue), *Pisonia inermis* (Puna tehea), *Spondias dulcis* (Brí), *Arundo Bambus* (Ofé), *Tanghinia Maughas* (Ruva), *Morinda citrifolia* (Nono), *Guettenda speciosa* (Tafano), *Boxa Orellana*, *&c. &c.*

(650 feet), into a huge basin, which lies at the foot of a lofty precipice, 420 metres (1450 feet) above the level of the sea; the temperature of the water in the basin itself being about 70° Fahr.

The steep crags, which tower overhead on all sides, and like a gigantic wall impede the view of the peninsula of Taiarapu, which lies behind them, are as marvellous in the luxuriance of the vegetation that covers them, as they are strategically important by their impregnability, the French having only succeeded in gaining footing upon them by treachery, and not by fortune of war. Some chiefs favourable to the French had acted as guides, and had led them by secret and dangerous paths up to these heights, for which service they to this day receive an annual pension paid in gold out of the state treasury. Formerly the rough, steep, almost inaccessible precipices formed of themselves a natural fort, and by their peculiar form, their position, and their strength, might be called the key of the entire island. The French conquerors immediately converted this spot, 630 metres (2052 feet) above the level of the sea, into a small fort with the usual tricolor flag, and, on the limited flat surface at their disposal, on which alone it was possible to build, erected a barrack and a few huts, besides laying out a kitchen-garden, which supplies with fruit and vegetables the residents of this solitary but lovely abode.

The officer on guard within the fort received us with that fascinating friendliness and *bonhommie* characteristic of the

French in all parts of the world, and which makes them everywhere such "jolly" companions. The provisions we had brought with us were speedily improved by the addition of everything that the garrison mess could set before us, and there was no lack even of delicacies, as they might be considered in these latitudes, for the little kitchen-garden contiguous furnished plenty of water-cresses and strawberries. The temperature was at this season singularly delicious and elastic, but in July, when the thermometer occasionally sinks to 46½° Fahr., the little garrison suffers much from cold and inflammatory attacks.

Another excursion, not less charming but far more arduous, is that to the Waiiria Lake, far in the interior of the island. This was achieved by Mr. Frauenfeld, one of the zoologists of the Expedition. From Papeuriri in the south of the island, which is easily reached in one day from Papeete by a road winding along the coast, the Waiiria valley leads in a S.S.E. to N.N.W. direction, up to the central peak, whence the deep valleys and water-courses radiate towards the coast like the spokes of a wheel. The valley is at first tolerably wide, but so densely covered with trees and shrubs, interlaced in wild confusion, that the horses had to be left behind at Papeuriri. A rather wide mountain-torrent rushes throughout its length, and, a little further on, when the valley contracts into a pathless defile, has not merely to be crossed so frequently as to baffle all count, but leaves the tourist to scramble up its rocky course by leaping from stone to stone. After four hours' toil

the valley suddenly closes in, and it becomes necessary to scramble up an almost perpendicular precipice 1000 feet in height. It was a tight bit of work, struggling upwards under a tropical rain over the slippery moss-grown blocks, every cranny and projection thickly studded with creeping plants. The crest of the pass, from 60 to 80 feet wide, hemmed in by precipices impossible to scale, was fortified by the natives during the war; that is to say, a breastwork of stones was thrown up, thus converting the depression on the other side of the mountain, in which lies the lake, into an inaccessible lurking-place. Not far distant is the deep narrow defile of Ruotorea, which played so conspicuous a part in the older history of Tahiti, as it was customary to fling into it all prisoners of war. At length, about two P. M., the lake itself was reached, lying in a sort of mountain cauldron, the sides of which descend steeply, while two of the loftiest peaks, those of Tetuero and Anaori, rise sheer out of the lake to a height of 5000 feet.* Except at the narrow strip of ground, on which M. Frauenfeld found himself standing, and which was nothing but a beach of small extent, there was no other spot within sight at which it would have been possible to land. The distance to the opposite shore, when visible, seems about half a mile. The whole basin, even where the enclosing rocks are steepest, indeed, almost perpendicular, and thence up to the

* According to Kulczycki's measurements the lake lies 430 metres (1401 feet) above the sea, and is 400 metres (1304 feet) in circumference, while the precipitous peaks around are 1800 metres (5865 feet) above sea level.

summits of the loftiest peaks, is densely covered with trees, reeds, and creepers, especially *scitamineæ*, the brilliant green hues of which are reflected in the mirror-like surface of the lake below. All the forests here are of wild-plantain, and the sugar-cane is found growing wild in a variety of places. A few ducks, a swallow, and a couple of parrots were all that was seen of animal life. A strange silence brooded over the entire landscape,—not a leaf trembled, not a sound broke the solemn stillness, and a depressing feeling of loneliness and utter abandonment seized on the traveller. The spot for the night's encampment was selected close to a large stone, against which a sort of penthouse was erected of banana leaves, which promised welcome shelter during the night. The exceedingly unfavourable weather prevented an adequate investigation being made of the environs of the lake, and as the following morning was ushered in with, if anything, an accession of bad weather, the plan which had been projected of constructing a boat with which to explore the lake was abandoned, and the party set out on their return to Papeete.

During our stay at Tahiti, a grand national festival took place at the little village of Faáa, about an hour's walk from Papeete. In fact, it has latterly become the custom, on every change of Governor, to have a feast of welcome in his honour in every district. On such occasions speeches are made, presents are prepared, dances are practised, and long tables, groaning under all sorts of food and drink, are set out in the open air for the invited guests. Governor Saisset, who

had been seven months in office, and had already made the the circuit of the island, visiting all the districts, was, however, not yet welcomed with the customary festivities of the inhabitants of Faáa. This solemnity accordingly passed off with all pomp on 22nd February. By eight A. M. some twenty cavaliers had assembled in front of the Government Palace, whence, with the Governor at their head, and accompanied by the native militia, also mounted, they took the road to Faáa. Only one lady, Madame de la Richerie, wife of the *Commissaire Impérial*, accompanied the cavalcade. On our arrival at Faáa we found the native females, attired in their gayest national dress, formed into line, and the men, partly clothed in the European manner, partly in the "*Paréu*," a broad scarf of printed muslin wound round the loins, shaking their variegated plumes, and carrying banners and flags of bark specially prepared for the feast, some Pandanus leaves being also handed to the guests.

As soon as the Governor had taken his seat in the verandah of the large and elegant residence of the chieftain, or warden of the district (for in Tahiti every office, with all rights pertaining thereto, descends among the female members of the chief's family likewise),* a number of girls, dressed all in white

* According to the laws of Tahiti, whenever the entire male descendants of a chief have become extinct, his eldest female offspring becomes chief of the district, sits as such in the legislative assembly, and has a voice in the administration of justice. At present there are five chieftainesses, who are members of the Tahitian parliament. Their husbands have no political influence whatever, except as the husbands of these ladies!

and wearing elegant garlands of flowers, stepped forward and began to sing a national Tahitian hymn; after which the orator of the day, a handsome man, dressed partly in the European, partly in the native manner, wearing a black round felt hat and feathers, and a variegated bark shirt over a black coat (!) delivered a very pathetic address. His delivery and his gestures recalled strongly to mind the New Zealand orators, but, unlike the latter, he was considerate enough not to tax unduly the patience of his foreign guests, to whom not one word of his very moving discourse was intelligible. This preliminary over, a number of girls presented themselves one after the other to the Governor, and in token of allegiance presented their garlands and the nicely prepared upper robe of bast. In this manner about 100 crowns and bast-mantilles were delivered, the most elegant of which the Governor kindly presented to the members of our Expedition.

In the reception-room a perfect mountain of bananas had been piled up, together with an immense heap of cocoa-nuts; these were also presented to the Governor and his suite, with the remark that every inhabitant of the district had contributed his mite to the festival, and bade the foreign guests a cordial welcome. "We may stay days, weeks, ay! months," exclaimed the orator, "and every house and all that was in it will be placed at our disposal; every one will take a pleasure in doing our bidding and forestalling all our wishes!"

After this hearty, idyllic ceremonial, the inhabitants of Punataná, an adjoining district, came up, amid a flourish of

drums and trumpets, and arranged themselves on the wide road right in front of the chieftainess of Faáa, in consequence of Maheanú, their chieftainess, a zealous Protestant, not permitting on her grounds the execution of any improper dances, or the singing of broad songs. In fact, neither the Upa-Upa nor any other of the numerous Tahitian "*Cancans à la Chicard*" were suffered to be danced; the consequence of which was that they danced it all the more eagerly on the road. Six drummers, each with his little kettle-drum, squatted cross-legged on the floor, the right hand being employed to strike the instrument. To this primitive music, enlivened at times by a shrill cry, both men and girls now began to go through the most indecent gestures, accompanied by leaping on and toying with their partners till they had worked themselves up to such an artificial frenzy of excitement, that each couple at last retired exhausted and bathed in perspiration, under a flourish of drums and a loud shriek from the orchestra.

The French Governor, the representative of European decorum, was one of the most animated of the spectators, and gave full swing to the recklessness of the Tahitians, who are accustomed to push the law of hospitality to the extent of prostituting their daughters, remarking, with much *naïveté*, that the natives would take it exceedingly ill were any one to refuse to take part in certain old habits and customs, or were to declare themselves openly opposed to their continuance!

At the close of the fête the Governor ordered some French

wines, "the cocoa milk of the Europeans," to be set before the inhabitants of Faáa. A *déjeûner à la fourchette* was laid out under tents, where, at twenty long tables covered in the European manner, the most distinguished personages took their seats. Every family had contributed something, the whole having the appearance of a regular pic-nic.

On each table were displayed flowers, bananas, bread-fruit, and other delicious products of the vegetable world. The European guests were seated at a large table erected at the upper end of an alley of trees. The chieftainess and her husband sat beside the Governor. Next in order was the Government interpreter, a Mr. Darling, the son of one of the oldest English missionaries sent out to Tahiti, on whom devolved the interpretation into Tahitian or French, as the case might be, of the various speeches and toasts.

The dinner-service, at our table at least, was entirely in the European manner, which seemed to me a pity; a meal without knives or forks, as is the custom among the natives, would have been infinitely more interesting and peculiar. The husband gave the health of the ruler of France, and—evidently in honour of the guests from the banks of the Danube—that of the Emperor of Austria! Immediately thereafter the Governor rose suddenly and left the table, with the intention, it would seem, of escaping some untimeous speeches of the natives. The company presently broke up, and while a few of the guests returned straight to the port, the majority,

the French Governor himself mingling with the excited populace, did not reach Papeete till far in the night.

The fête at Faáa was followed, a few days later, 24th February, by a dashing ball at the Governor's. The *Pré Catalan* was gaily festooned with coloured lamps, and various devices for illuminating the festivities. The Tahitians, accustomed to dance only in the darkness of night, or at most under the light of a few paltry suet candles, flocked hither in crowds to revel in the brilliant light, and witness the Europeans dance the "*Upa-Upa*" after their own fashion. Within the Palace was assembled all that was ultra-fashionable in Tahitian society. All the authorities and notabilities of the country were present. More than 200 persons thronged the apartment, where, out of courtesy to our host, the band of our frigate played a succession of polkas, waltzes, and quadrilles. Queen Pomáre, accompanied by her consort and several princes and princesses of her house, was also present. The Governor received her at the threshold of the apartment, offered her his arm, and escorted her to seats already reserved for the royal family. Pomáre is now almost fifty years of age, stout and under the middle size, with a full inexpressive countenance, and a waddling gait. Her toilette was simple but thoroughly European. She wore a white ball-dress of the latest French *mode*, and flowers in her hair. In her hands she also carried a gigantic bouquet. Her youngest son, a boy of twelve years, named after Prince de Joinville, showed spirit

and vivacity; the heir to the throne seemed feeble, sickly, and too soon matured.

This happened to be the first presentation of the members of the Expedition to the Queen—the first opportunity they had had of conversing with her. Hitherto there had been apparent on the part of the French authorities a reluctance to bring about a meeting, which the Queen might possibly regard as a triumph. In fact, Queen Pomáre was not at liberty to receive any one in her house, except members of her family, without first obtaining the permission of the French authorities. Two incidents, which had occurred to arouse the French authorities shortly before our arrival, had still further contributed to sharpen the Queen's watchfulness, and to limit her receptions to her own nearest relatives. The poor woman had, after much pressure, and without communicating with M. Saisset, signed in his absence a document which fairly ran counter to a previous ordinance on the same subject. A territorial squabble, which had long before been decided by law, had, through the exertions of one of the parties interested, been once more brought up for trial, before the native bench, as it was thought that the result of the opinion of several judges might be productive of some more favourable result. The Governor refused his assent to this proceeding. The Queen, notwithstanding, under bad advice, issued a written mandate to the native Court to try the case over again. As the Court was being assembled, however, it was dismissed by the Governor, the chief judge banished to an

adjoining island, and the Queen compelled herself to abrogate the ordinance. A somewhat similar affair had occurred a few weeks before at the village of Papaoa, near which Queen Pomáre possesses a country-house, in which some of the royal family were implicated. Some native feasts, which in Tahiti are always accompanied with the wildest Bacchanalian license, had excited the crowd to an unusual degree. A few of the Tahitian nationality-mongers drank death to the whites, and pretty openly declared their hostility to a foreign yoke. The excess of a couple of drunken patriots was magnified by the excited fancy of the French officers into the dimensions of a political *émeute*, and seemed to present the long-coveted opportunity of showing their authority, and of acquiring with little trouble the credit of having nipped in the bud a formidable insurrection. As soon as the news of these seditious speeches and exclamations reached headquarters, the Governor marched in the night with 150 well-armed soldiers to Papaoa, distant about an hour's march from the capital. Pomáre and her family were just assembled to evening prayers, when the Governor made his appearance, and ordered her forthwith to accompany him to Papeete. An Englishman resident in the harbour was ordered to convey the Queen to her town residence in his small one-horse waggon. Her two sons, however, were escorted to Papeete as prisoners on foot, and their hands bound behind their backs, their ears saluted by the oft-repeated threat of the soldiers that their lives should answer for any intentional injury

which the Europeans might sustain at the hands of the natives. As the procession approached the harbour, the Queen bent forward to her driver, and asked him in a low voice whether it was intended to carry her to the *Carabus*.* The driver turned off towards her own residence. As he turned the corner, the Queen suddenly started forwards, and seizing the reins from the driver with both hands, stopped the horse, and looked whether her two sons were by her side. She feared they would be taken to the prison, but they were likewise conducted to her house. However, Queen Pomáre and all her family and attendants were cautioned not to leave Papeete till the matter had been thoroughly inquired into. An intimation was even conveyed to the Protestant missionary Mr. Howe that he must discontinue his visits to the Queen till further orders.

Under these circumstances it is more than probable that the persecuted Queen only made her appearance at the ball in deference to the Governor's commands, and hence possibly she confined her conversation with the strangers to the most common-place topics. The Queen was described to us

* *Carabus* (Anglice Calaboose) is a corruption of the Spanish word *Calabozo*, a prison. The *Carabus* of Papeete is a sort of pound in which drunken people or mischievous vagabonds are confined, and whence they are released on payment of 5 or 10 francs. These mulcts or convictions form a not unimportant source of revenue, and are of twofold demoralizing operation; for while it is the interest of the police on the one hand to make as many arrests as possible, so as to insure a larger sum for division, the wretched, sensual Tahitian girls find in the prosecution of the filthy trade that has brought them within the clutch of the police the best means of procuring their release!

as a clever, well-educated woman, who spoke English with considerable fluency, as also a little French, and in public affairs displayed a surprising degree of shrewdness and tact. With the French authorities she conversed exclusively in Tahitian. She appears much to dislike the intervention of an interpreter or secretary, preferring greatly to place herself directly in communication with the official concerned, as an autograph letter exhibits, which she addressed to the Treasurer Receiver-general, requesting him to send her a carriage in which to drive on business from her estate at Papaoa to Papeete.*

It is very surprising to find in the course of conversation with natives of every grade, that notwithstanding the French Protectorate has now lasted upwards of twenty years, the French language has hardly made the slightest advance. We met but two natives who could speak French. The knowledge of English even is confined to the few individuals who live entirely on the coast, and come frequently into contact with foreigners. A law was in contemplation, however, at the period of our visit, by the provisions of which no native after the lapse of 10 years, that is to say, by 1869, would be eligible for any Government employ, not even that of a *murtói* (police-sergeant, literally "one who listens se-

* Queen Pomáre finds herself entirely dependent upon the French Protectorate. On the slightest symptom of asserting her position she is met by a stoppage of her allowance, and as, in consequence of the rather opulent mode of life adopted by the generous-hearted lady, the incomings and outgoings are apt not to square, her pecuniary straits are not infrequently made use of for political purposes.

cretly to the words of the people"*), unless he has a thorough acquaintance with French.

On the whole, the Government of the Second of December appears to regard Tahiti simply as a military outpost and naval station, and to attach little value to the evident future commercial importance of the island. If, however, there are behind this ostensible indifference no secret views, or political *arrière-pensées* involved, it must undoubtedly be pronounced most unjust and unwise. True, Tahiti possesses but a small proportion of surface suitable for cultivation; true, with the exception of oranges,† there is hardly any natural product exported,‡ the produce of the island barely sufficing to support its own population; but, apart from its extremely favourable geographical position, and the vegetable profusion of this and the adjoining islands, Tahiti might, under able administration, be made a sort of general emporium for the

* Obviously a corruption of the French "mouton," the popular name for a spy.

† Of this expensive fruit, which grows in large quantities on the island, and only needs to be gathered, there are exported annually some five or six ship loads, worth about fr. 200,000 (£8000), all which find their way to California, where 1000 oranges are worth from $40 to $60 (£8 8*s.* to £12 12*s.*), whereas, a similar quantity is worth in Tahiti at the outside £1 to £1 4*s.*

‡ Besides the cocoa-nut oil and arrow-root, which are at present exported from Tahiti and constitute its chief trade, the produce of the neighbouring islands might be conveniently passed through Tahiti. The pearl oysters (*Meleagrina Margaretifera*), which are usually dredged for in the months of January, February, March, and April, come chiefly from the Paomotu and Gambier groups. The latter-named group, however, only sends about 500 tons of these annually, worth about fr. 500 to fr. 600 (£20 to £24) per ton. In the year 1859, the entire importation of these was contracted for by a merchant of Papeete at $140 (£29 10*s.*) per ton. The natives of Gambier, accustomed to dive, use to bring up the pearl oysters from a depth of from 150 to 180 feet.

interchange of the products of Polynesia against the fabrics of Europe.

The total superficial area of Tahiti amounts to 104,215 hectares, 79,485 of which form Tahiti proper and the isthmus of Taravao, while the peninsula of Taiarapu comprises the remaining 24,730. The greater portion of this surface is occupied by mountains, only a very small proportion being devoted to tillage. At the mouths of several of the rivers are small strips of arable land, of which the plains of Taunoa (near Papeete), Point Venus, Pusenaura, Papara, Papuriri, and Papeari, as also the delta of the river Fautáua, on the peninsula of Taiarapu, are the most important.

All these level grounds put together do not amount to more than from 2200 to 2500 hectares, while the swampy state of much of even this small area renders many portions fit only for the cultivation of taro and rice.*

The climate of Tahiti is uncommonly salubrious and delightful; the temperature is tolerably uniform, and is sensibly moderated by the alternate land and sea breezes. Only about mid-day, when there usually sets in that profound calm, which the French, in their elegant epigrammatic way, style *l'immobilité des feuilles*, the heat becomes absolutely oppressive, but the mornings and evenings are cool, and the air very refresh-

* On the island of Eimeo, or Morea, lying off Tahiti, the area of which is 13,237 hectares, there is a table land about the centre of the island, surrounded by a semicircular range of lofty precipices, which would be found thoroughly fit for cattle pasture. The cultivation of the grape and of European vegetables might also be profitably undertaken.

ing. The average maximum temperature during the rainy season is 84°.4 Fahr., the average minimum 74°.6 Fahr. Only immediately prior to the outbreak of a storm does the fluctuation of the thermometer become strongly marked. In the dry season the temperature averages 80°.6 Fahr. during the day, and 68° Fahr. during the night. When, however, as occasionally happens, the temperature at Papeete sinks to 57°.2 Fahr. and at Fautáua to 46°.4 Fahr., or even lower, even the Europeans are compelled to adopt certain precautions against taking cold, which the natives for the most part disregard, and are accordingly liable to acute inflammatory disorders.

With such a temperature, combined with the fertility insured by the volcanic tufa soil, it is perfectly evident that the majority of the tropical and sub-tropical nut-bearing and other alimentary plants might be extensively grown upon the island without much difficulty. The sugar-cane, the coffee-tree, the cotton-shrub, the vanilla, the cocoa-tree, the indigo plant, the sorgho,* rice, maize, &c., flourish here in a marked degree, and their persistent cultivation would realize a splendid profit for the landowner.

Of fruits there are bananas, bread-fruits, mangoes, ananas

* Here also we encountered this useful plant, which was first introduced into Tahiti in 1851, by means of seeds from Paris. Of these twenty-five were sown, which within three months gave a sufficient return of seed to admit of the cultivation of the sorgho being extended through a number of districts. One year later, the crop amounted already to about 2100 kilogrammes (4900 lbs., or two tons and a quarter), which were disposed of at 1½d. per kilogramme (somewhat under a penny per lb.).

(pine-apples), papayas (pomegranates?), pandanus fruit, cocoa-nuts, oranges, lemons, anonas (a kind of custard apple), guavas, &c. The chief sustenance of the natives consists of the following:—

I. The féi, or wild plantain (*Musa Féi*, or *Musa Rubra*), of which there are five varieties. It is first encountered at an elevation of from 600 to 800 feet above the sea, grows most luxuriantly between the zones of 1000 and 1500 feet, is of a very peculiar saffron-yellow colour, and is usually either roasted or boiled.

II. The haari, or cocoa-palm (*Cocos nucifera*), whose trunk, bark, leaves, and fruit are pressed into their service by the natives. The fruit, however, is the most important, as it is used as meat for man and beast, as well as a beverage, and to obtain oil from it. Mixed with fine sandal-wood shavings and other aromatic substances, the oily liquid pressed out from the cocoa-nut is used by the Tahiti women as a much-prized cosmetic (*monoï*), with which to lubricate their long beautiful black hair. Here, as among the other South Sea islands, the cocoa-palm begins to bear after the first seven or eight years only, after which, however, it becomes so abundant that the fruit of each tree is valued at five francs annually. It takes 20 to 25 cocoa-nuts to make a gallon of oil.*

III. The urú (also called *Maioré*), or bread-fruit tree (*Arto-*

* A gallon of cocoa-nut oil is worth, by way of barter for goods, about one franc and a half, and for specie one franc. The adjoining islands abound in cocoa-nuts, Anaa, one of the Paomotu group, being capable of delivering from 300 to 400 tons of oil per annum.

carpus incisa), is, after the cocoa-palm, the most useful tree on the island. The fruit, baked in a canak (or native) oven, (*vide ante*, p. 162), between two heated stones, is the substitute for bread to the Tahitians. At the period of the war, or in consequence of a short crop, the natives, like the New Zealanders and the aborigines of the Caroline Archipelago, buried the fruit of the urú in the earth, and ate it in the putrefied state. The bread-tree is productive thrice in the year. The first crop, the best and largest, ripens in March, the second in July, the third, Manavahói, at the end of November. The fruit varies from eight to twelve pounds in weight.

IV. The fara, or *pandanus*, the fruit of which is treated in the same manner as that of the urú, while the leaves serve as a thatch for the bamboo-cane huts of the aborigines. Of the red seeds of the *pandanus odoratissimus*, the ornament-loving Tahitian women prepare exceedingly fine coronals and necklaces. The leaves of another species, called irí by the natives, are used for enveloping tobacco, and making cigarettes, as also in the manufacture of house mats, and mats on which to sleep.

V. The taro (*Caladium esculentum*), a sort of tuber, which at certain seasons supplies any deficiency in the bread-fruit, and is very carefully cultivated by the natives. Of this plant there are in Tahiti thirteen varieties.

VI. Pia (*Tacca pinnatifida*), a sort of tuber resembling the taro, the mealy substance of which is chiefly used as nutriment for children and convalescent persons, and which in

commerce is erroneously confounded with arrow-root, the latter being chiefly procured from the Antilles and India, more especially from *Marantha Indica* and *Marantha arundinacea*. The pia is also much used in Tahitian households in the preparation of small sweet cakes (*Poe-pia*), and is a not unpalatable substitute for wheaten flour.

VII. Hói, or yams (*Dioscorea alata*), of which useful tuber a variety of species are extensively used on the island.

VIII. Umará, or sweet potato (*Convolvulus Batata*), preferred by the natives to the European potato, and widely cultivated, though it has somewhat degenerated in Tahiti.

IX. Fare-rupe (*Pteris esculentum*), a kind of fern, the root of which was in former times much used for food here, as also in New Zealand.

There still remain to be noticed two plants of much interest, from the roots of which the Tahitians, prior to the arrival of the Europeans, obtained strong intoxicating beverages.* These are the ti-plant (*Cordyline Australis*) and the kawa, or ava (*Piper methysticum*), of which latter fourteen varieties are known to the natives.

The cultivation of this species of pepper is at present prohibited in Tahiti, and kawa-drinking has accordingly fallen into entire disuse. Only on the peninsula are a few aged

* The fermented juice of the orange, the pine-apple, the *pandanus* fruit, the *spandias dulcis*, and the wild bananas, were also used in former times for the preparation of intoxicants. Since the introduction of European spirits, the natives discriminate all foreign drinks as *Ava-papáa*, their own being named *Ava-maóhi*.

Tahitians to be found, who appear obstinately opposed to the use of our alcoholized liquors, who on special festivities will face every privation for the luxury of boozing over their kawa, for which they sometimes pay five francs for a small piece.

Formerly the process of chewing the kawa was performed by the young girls, and then only by those who had the finest teeth. Before beginning this delicate task, they were required carefully to rinse their mouths and purify their hands, for which purpose they made use of special vessels. When the roots had been slowly and equally chewed, and had been changed into little cones held together by saliva, they were mingled with water in a large wooden vessel (*Umeli*), standing upon a tripod, and gently squeezed by hand. In many of the islands this process of dilution is performed by mixing cocoa-nut juice instead of the customary water. The kawa is a very fluid substance, not very inviting in appearance at any time, but still less so when one has witnessed the mode of preparing it. Usually it is of the colour of *café au lait;* but occasionally, when some of the leaves of the plant have been mixed with the root, the beverage assumes a greenish tinge, something like wormwood, although to the palate it has nothing in common with that substance.

Kawa is drunk out of the half of the cocoa-nut shell, which in the hands of a native skilled in carving becomes a really elegant beaker. Only families of high birth, the Arii and

Raatira,* who are exempted from toil, are however able to indulge in the luxury of a daily draught of kawa. The symptoms of intoxication are very similar to those of opium. In the kawa-drinker, like the opium-eater or Samshoo smoker, there is a nervous tremulousness perceptible, followed by utter exhaustion, and an overpowering necessity for sleep. After its effects have passed off, there is a sensation of weariness in the limbs, to remove which the regular kawa-drinkers are accustomed to plunge into the cold waters of the nearest mountain stream. A very peculiar cuticular disease, the infallible result of the daily use of this beverage, is called by the natives *Arewarewa.*

A German chemist, M. Nöllenberger, who was resident at Papeete during our visit to the Archipelego, had succeeded in September, 1858, in crystallizing the essential principle of the kawa root, which he called Kawaïn, the powers and properties of which he was about to investigate more minutely. As we have since then been favoured with a copy of the very valuable work of Mr. G. Cuzent upon Tahiti, already alluded to, we learn therein that that zealous naturalist had already,

* Before the arrival on the island of the Europeans, Tahitian society was divided into three classes: viz. Arii, or chiefs; Raatira, or land-holders, of whom the most distinguished in each district were called Tataui; and, lastly, Manahune, or Tenantry at will. To the latter class belonged all prisoners of war. Between the Arii and Raatira there was a middle class, the Eiétoaï, corresponding to the European title of Honourable. Latterly the name *Tavana* has come into almost universal use for the Arii, being in fact nothing but a corruption of the English word "Governor."

in 1857, found in the kawa-root an organic base, which he termed Kawahine, and which is fully described in his interesting Monography (p. 99).

Owing to kawa-drinking having been prohibited in Tahiti, chiefly through the influence of the missionaries, the use of brandy and other spirituous liquors is beginning to exercise a not less baneful influence in that island upon the physical and intellectual powers.

In agriculture, as in commerce, the effect of the French Protectorate has been visibly to slacken the rate of progress. The number of ships that visit the island does not exceed 60 to 80 annually, representing an interchange of merchandise to the value of about £64,000 per annum, of which about five-eighths, or £40,000, may be estimated as the amount exported.* What is most surprising, is the small number of whalers who visit the island for provisions and repairs. In 1836, the total number was fifty-two; at present not more than five or six in the year enter the harbour of Papeete. In the official reports this falling off is ascribed to the fish having forsaken these regions, while the stagnation of trade is generally ascribed to the reduction of the French garrison (!) in Tahiti, and the rise of late years of the Sandwich Islands and California. But the *true* cause of the decay is to be

* These calculations are merely approximative. The Custom House at Papeete has sufficient documents, but it keeps them secret, apparently for political reasons, if we may credit the remark of a Tahitian. "It is not wished to let all the world know that we are *not* in a prosperous state."

sought for in a very different direction. It lies chiefly in a very defective system of administration, which is constantly being transferred from one hand to the other, having at its head to-day a ship-captain, and to-morrow possibly an officer of gensdarmes or an engineer. A letter* addressed to the Emperor Louis Napoleon by an English merchant long resident at Tahiti, unsparingly unveils the present disorders of Tahiti with respect to rights of property, administration of justice, legislation, and social state, and draws a shocking picture of the actual state of the island, once in such high estimation for the felicity of its inhabitants.

On the other hand, the very benefits the mother country is supposed to derive from its Protectorate are at least problematical. While the establishment of French stations in Oceania has required about £240,000, the annual cost of keeping them on foot has never cost less than £100,000, and of this the Protectorate of Tahiti figures for from £24,000 to £28,000.† This by no means trifling sum is not however employed in promoting commerce or advancing trading interests; for not more than two or three ships in the year come direct to Tahiti from France, while the majority of the

* Letter concerning the actual state of the island of Tahiti, addressed to H. M. the Emperor Napoleon III., by Alexander Salmon. London, Effingham Wilson, 1858.

† The French garrison in Tahiti and Eimeo (Morea), including the administrative officials, numbers about 400 men. The Governor receives, besides extras, £1200 pay; the *Commandant particulier* draws other £800, in addition to which both these officers draw *allowances* as officers in the Imperial navy (13*s.* 4*d.* to £1 per diem.)

fabrics used there are English, which are imported from Valparaiso, the only port with which Papeete has regular communication.

The military colony of Taiohái on the island of Nukahiwa, one of the Marquesas, has been entirely abandoned since 1st January, 1859, on account of the too great cost of keeping it up, although Uté-Moána, the king of the Marquesas, and the chiefs of the island of Nukahiwa, were desirous of retaining the French Protectorate, and had drawn up a formal address of submission, while, on the other hand, New Caledonia (Dum' mbia) can only be kept up at very considerable cost.

Lately great reforms have been everywhere inaugurated, in order to diminish the heavy administrative expense hitherto incurred. The French colonies of eastern and western Oceania are to be provided with entirely independent administrations. The Governor of the French establishments in Oceania Oriental is to reside in Papeete, while his colleague of Oceania Occidental is to have his seat of Government at Port de France in New Caledonia. This subdivision, however, must add materially to the cost of maintenance, while it is difficult to see how it can augment the prospects of any increase of revenue.

The French, in a word, have no success in their attempts anywhere at colonization; they are not practical colonists. The absence of this faculty, if one may call it so, is doubly apparent in the Southern hemisphere, where they are surrounded on all hands by English colonies. True it is, the

English also have usually acquired by the strong hand their possessions in Oceania, in Australia, in Asia, &c., and from the stand-point of humanity it is impossible always to defend the means by which they have made themselves masters of the fairest and most fertile countries on the globe. But what have been the results directly springing from these high-handed acts, these political *faits accomplis?* England has thrown open to the unrestricted enterprise of all trading and seafaring nations those islands and continents so highly favoured by nature, with their feckless fast-disappearing aboriginal races; she has striven, by giving free institutions, to attract diligent colonists, to develope the natural wealth of these countries by means of scientific exploration, for the benefit of all; she has wafted to the remotest corners of the earth the seeds of Christian civilization, and by her energy, her capacity for labour, and her earnestness of purpose, has impressed all, even the most savage races, with a feeling of envy and astonishment at the intellectual superiority, the power, and the greatness of the white man!

Under the influence of liberal but more morally stringent laws, Tahiti might speedily be raised to the position of a great emporium of the Southern seas, the Singapore of Oceania. Under the French Protectorate, on the contrary, the island, with its population long since renowned for indolence and sensuality, has become, in fact, what a French captain once jocularly termed it, "La Nouvelle Cythère!"

Although the Society Islands are by no means a French

penal settlement (the climate being possibly *too healthy*), there are, nevertheless, both at Tahiti and Nukahiwa, a few men, rather politically discontented than downright dangerous, whom a merciful interpretation of French martial law has exempted from banishment to Cayenne, (that name of terror!*) and whom we might almost say that a beneficent destiny has transported to the shores of the South Sea. One of these political offenders, named Longomasino, has to thank the visit of the Austrian frigate to Papeete for his restoration to liberty. He had been a journalist at Toulouse

* We had an opportunity while at Papeete of obtaining some particulars of this renowned French penal settlement from the mouth of a person whom no one will be likely to accuse of exaggeration. M. de la Richerie, who, while we were at Papeete, filled the position of Imperial commissary, and is the present Governor of Tahiti, was for four years (1854—57) director of the penal settlement at Cayenne. During the period of his authority the entire population consisted of from 5000 to 6000 prisoners, 1500 garrison, 200 free settlers, and from 16,000 to 18,000 negroes. The expense of keeping on foot this small colony was not less than from £160,000 to £200,000. The mortality among all classes, free as well as prisoners, was perfectly appalling, averaging from 23 to 33 per cent.!! Of 6000 prisoners, 2000 died in one year; out of 36 medical men, 18 died in the discharge of their duties. The number of fever-stricken in the hospital was never less than from 500 to 600!! The director once entered an apartment in which above 250 of the unfortunate political criminals lay on their sick beds. He inquired of the physician in attendance how long they were likely to live? Possibly a year, was the reply. "*Dépêchez-vous donc*," said the director, as he turned from the unhappy wretches, who had no resource except the hospital, and, sick in mind and body, longed earnestly for the day which should see their wretched couches vacated for the calm tranquillity of death. M. de la Richerie was of opinion that no political convict lives more than four or five years in Cayenne, and that even the free settler cannot withstand the deadly influence of the climate above ten years. But the government founded on the 2nd December gives itself little concern. The utility of the system of deportation has been fully understood, and is unsparingly carried out. The time seems to be at hand when all Frenchmen who venture to challenge the Napoleonic ideas, will be banished their native country, nay, exiled from Europe.

in 1851, and maintained a zealous correspondence with some of the most intimate hangers-on upon Louis Napoleon, till the *coup d'état* revealed the French ruler's projects, and Longomasino joined the camp of the opponents of the new empire. His contumacious agitation against the new order of things led to his imprisonment and ultimate banishment. He was first transported to Nukahiwa, one of the Marquesas Islands, and afterwards received permission to settle at Papeete in Tahiti. Starting as a farrier, then an advocate, and finally a tavern-keeper, he was unable in any of these capacities to earn a subsistence for himself and his numerous family; the less so, that political intrigues deprived him of the right to practise at the bar, and this compelled him to have recourse to a business for which he had neither taste nor turn. If we understood matters aright, Longomasino, in the course of his juridical labours, had been able to do many a good turn to the Catholic bishop of Tahiti in his dispute with the French administration, and it was therefore less sympathy with the unfortunate political convict than the desire to play an adversary a trick by depriving him of an able adherent, which induced the Governor to ask our Commodore permission to give a free passage to Longomasino, who had been condemned to transportation for life. The request was willingly granted, and on the eve of our sailing Longomasino came on board the frigate, while his wife and family were to follow by a merchant-ship. The unhappy man, who had not words enough wherewith to express his gratitude for the friendly reception he experienced,

still further gained the sympathies of all on board, with his melancholy fate, by his manly reticence on the subject of the injustice he had sustained.*

Another convict, who had excited universal attention at Papeete, was M. Belmare, a well-educated young man, who in 1850 avowed he had shot at Louis Napoleon while at the Tuileries, and, in consequence, been transported to Tahiti. The fact that Belmare has since then been taken into the employ of the treasury at Papeete, where he receives a salary of £100 per annum, gave colour to the most whimsical reports as to the clemency displayed by the French Government in this case; yet we repeatedly heard the opinion expressed that Belmare was solely put forward as a tool for carrying out—which was to be used as a blind by giving the Government of Louis Napoleon opportunity for new stretches of arbitrary power. Whether, however, a residence at Tahiti, even with a handsome salary, be sufficient recompence for such services, M. Belmare alone is in a position to say.

A succession of bad weather, such as so frequently occurs in the tropics, delayed our departure for several days. Now it was a heavy gale, commencing in the north and gradually veering round to W. and S.W; now it was a series of calms, while the surf swept in unbroken masses on the beach, and so heavily, that it seemed the height of imprudence to take the

* Shortly after his arrival in Valparaiso, Longomasino went to Serena, a city in Chili of 20,000 inhabitants, near some rich copper-mines, where he occupied himself with editing a newspaper in Spanish.

frigate out through the narrow channel which constitutes the mouth of the harbour of Papeete, and is nothing but a cleft in the coral walls which surround Tahiti, and protect it from the ocean swell.

At length, on 28th February, at day-break, we got under weigh. One of our own boats, as also a boat from the French steamer *Milan*, which was courteously placed at our disposal, towed the *Novara* outside the reef, and materially aided the efforts of our men, a barely perceptible catspaw of wind just filling the sails. Piloted by a native lootse, we steered out so close to the projecting coral reefs, that the frigate all but touched them.

We now had a parting view of Tahiti and the little island of Motu-Uta, where stood our improvised observatory, and where so many sleepless nights had been passed in observations for the purpose of defining astronomically the exact position of the island.

We found the breeze freshened once we were outside the reef, and steered northwards, beautiful Tahiti, with the imposing and irregular outline of its hills, and the richness and variety of its vegetation, recalling, in some aspects, the glowing loveliness of the tropics, in others, the still sublimity of some of our Alpine landscapes, till it lay behind us like a shadowy vision of dream-land.

Almost simultaneously with the departure of the *Novara*, the American whaler *Emily Morgan*, Captain Chase, stood out from the harbour of Papeete. This vessel had been whaling in

the southern seas during five years, without any adequate return for her perseverant exertions. Her entire take was as yet only four barrels of train oil!! She was now making for the Sandwich Islands, and thence home to Boston. Latterly, the North American whalers have formed themselves into partnership, so as to divide profit and loss. If his companions had encountered no better fortune than Captain Chase, they might safely aver they had worked five years for nothing. The crew of the *Emily Morgan*, who were as usual almost entirely dependent for their remuneration on their tenth share of the oil, had begun to despair, and six of their number deserted from the ship, to stay behind at Tahiti. Throughout the voyage, Captain Chase had had his wife with him, a spirited energetic American woman, who on occasions could take her trick at the helm, or even direct the ship's manœuvres. So completely had she fallen into the ways on board ship, that even in ordinary conversation she frequently let slip a few sea-phrases, and recounted, with much pride, how, when the boats had been away in pursuit, she had kept her watch like a regular officer.

On 8th March, Shrove Tuesday was celebrated on board. Several sailors had disguised themselves as Invalids, as Tahitians, as Nicobarians, &c., and played off all manner of pranks. Dolce, our cook, the merry-andrew of the vessel, figured as a troubadour, in which capacity he sang several heart-thrilling melodies. In the afternoon the band played

on deck, and in the evening the jolly tars, to their great gratification, received each a double allowance of grog.

It was our Commodore's intention to cross the shorter diameter of the almost elliptical curve of equal magnetic declination, which occurs in this vicinity, with the view, if possible, of ascertaining by observation by what law the "local variation" of the needle is diminishing within the curve of 5°, the latest indicated in the most recent magnetic charts.

This curve of 5° easterly magnetic declination lies, according to F. Evans,* between the parallels of 5° 30′ N. and 13° S. lat., and 120° W. and 134° 30′ W., north-eastward from the Marquesas Islands.

The magnetic needle, as is well known, does not point to the geographical poles, but is deflected from the due north and south meridian, in a direction eastward or westward according to locality, at an angle which, in the measure of the easterly or westerly magnetic variation of the plane, is called eastern or western declination or variation, and which not only gradually alters at every place with the lapse of time, but also is universally found to assume different values at different places, so that in certain lines, known as lines of equal declination, the variation remains the same for all places under that line during a certain given period.

As the compass is the sole reliable guide of the seaman

* Chart of curves of equal magnetic variations, 1858, by Frederick Evans, Master, R.N.

while traversing the ocean, and it is of the utmost importance to investigate and accurately lay down the ship's course for the port which is her object to make, it appears necessary to explain to the uninitiated how the local variation of the magnetic needle is determined, as thereby one can readily find the precise angle at which the magnetic meridian of any place is deflected from the true meridian.

The determination of this divergence is effected by means of observations of the sun, by the aid of which one can calculate at any moment its actual bearings, as seen from the deck of the ship, and this, compared with the true position of the sun, gives the amount of variation.

This apparently simple method of determination encounters in practice, owing to certain local influences, a variety of obstacles, for it is executed on board of a ship, which frequently contains within itself, at a greater or less distance from the binnacle, large superficies of iron, operating less or more prejudicially upon the needle, by deflecting it from the direction which it would actually have but for these masses of iron. Hence the variation is not even the same in all parts of the ship, nor does it follow the same direction, but varies according to certain laws, founded upon the intensity and direction of the magnetic attraction of the earth. It is therefore necessary to make allowance for these local deflections of the needle, in order to find the true variation of the needle.

So far as regards the last-named, many thousand observations, both by land and sea, have resulted in furnishing us

with a rule for empirically finding the amount of variation, for short periods at least, according to which the magnetic needle is found to vary from year to year at every spot along certain given lines, which it has been found possible to delineate upon the charts; thus showing at a glance the amount of variation to be allowed for at any given spot. As this is sufficient for all practical purposes of navigation, the seaman is, in most cases, relieved of the necessity of making for himself these observations and calculations, if only he can ascertain with anything like accuracy the position of his ship on the earth's surface, and has determined the amount of local variation on board.

These iso-magnetic lines are, however, susceptible of great improvement, and if they are ever to become practically and universally useful, repeated observations must not be neglected by such navigators as have the means and the requisite scientific knowledge to pursue such investigation.

On board the *Novara* not a single sunshiny day was suffered to pass without the variation being frequently determined, or such observations repeated as related to the determination of local attraction on board.

Under such circumstances, an unusual value attached to our ascertaining and following up so far as practicable the decrease in declination of the magnetic needle till it reached the zero point assigned to it, and comparing our own observations with the amounts stated on the charts.

It was, however, at least as regarded nautical matters, of

by no means special importance, that we should reach the very point of minimum declination,—it sufficed to ascertain that the observed diminution, as marked upon the charts, corresponded with our observations, which proved, in fact, to be the case.

This confirmation proved the more satisfactory, that when we reached the N. E. side of the Paomotu group (also called Pakomotu, lying between 13°—22° S., and 135°—150° W.) we found a fresh north-easter blowing, a phenomenon which during the fine season is due to the high temperature of these islands, and of course interposed a serious and persistent obstacle to our intended N. E. course.

Another impediment to our attempt to get nearer to the zero point of minimum declination presented itself in the far from healthy state of the ship's crew. A peculiar endemic colic,* called by the French at Tahiti *colique sèche*, or *colique végétale* (dry or vegetable colic), was rapidly extending among the men, and had already carried off one victim, a sailor, who died after a short illness on the morning of the 9th March, and was committed to the deep the same day with the customary solemnities.

By 17th March, in 15° 52′ S., and 137° 23′ W., the declination of the magnetic needle had diminished to $5\frac{1}{2}$° E., and thus far agreed pretty accurately with that indicated by the charts; it is not, however, likely that it actually falls to a

* This colic stuck to the ship for nearly eight months, and out of 36 cases, the shortest time it took to run its course was nine days, the longest 94.

zero point, but rather diminishes gradually as the central point is approached, which would hardly be the case if the declination actually fell to zero.

By 25th March we found ourselves about the latitude of Pitcairn Island, from which we were barely one hundred miles distant. This island, so singular alike by its physical features and its remarkable history as the retreat of the surviving mutineers of the *Bounty* with their families, has latterly had its interesting population removed to Norfolk Island, where there was room for the simple God-fearing community to increase its numbers without the risk of an excess of population over the resources of the soil, as there appeared reason to apprehend had they been left on Pitcairn Island.

The story of the mutiny itself, the escape and subsequent career of Captain and Admiral Bligh, the extraordinary change that came over Adams when, ere ten years had passed, he found himself the sole survivor of the mutineers, all but one of whom died a violent death, and the hardly less marvellous manner in which this primitive community was discovered, after the lapse of nearly thirty years, are themes that need no recapitulation here. Much less known however is their subsequent, hardly less singular, destiny, and it will not, therefore, be out of place if, in the interests of the general reader, we vouchsafe a passing notice of their strange career.

In 1814, twenty-five years after the mutiny, Sir Thomas Staines in H. M. S. *Briton* visited the island, at which time

the little colony consisted of 46 individuals, 38 of whom had been born thus far from all civilization. Nevertheless the little community were living contented and happy in all the simplicity of a patriarchal family, and in the cultivation of the cardinal virtues of Christian morality, inculcated by the now venerable Will. Adams, such as thankfulness to the Creator of all things, patience, gentleness, and neighbourly love.

The very singular origin of this exemplary race repeatedly attracted passing ships to this little-known island, and this intercourse did not fail to exercise a pernicious effect upon the spiritual-mindedness of the islanders, the more so that there were among these numbers of desperate adventurers, who did all in their power to mislead this simple-minded race.

When Captain Beechy, in 1825, approached the island in his ship *Blossom*, he perceived a small boat standing off towards him under full sail. On board were Adams himself and several of his pupils. They requested permission to come on board, and hardly waiting for an answer, the little active lads had clambered up and stood on the quarter-deck. Adams had lost his youthful agility, and for a moment seemed to hesitate. The sight of a man-of-war, it may well be conceived, made a deep impression upon him. It called up too many mournful recollections, and when he beheld the cannon and all the "circumstance of war," with which in his youth he had been familiar, he could no longer restrain him-

self, and tears of emotion flowed down his wrinkled cheeks and silvery beard. At this period the island boasted 66 inhabitants, and the old man felt deep anxiety lest the little spot of earth to which he was banished apparently without hope of reprieve, should ere long prove insufficient to provide adequate support or even space for its rapidly-increasing population.* He spoke to the excellent Beechy upon the subject, and implored the English Government to provide his little flock with a more comfortable abiding-place under the English sceptre, and better adapted to the wants of his rapidly-increasing posterity.

On 5th March, 1829, Adams expired at the age sixty-five, surrounded by his children and descendants. In the latter days of his illness, during the short intervals of ease which his intermittent agony left him, he expressed a wish that the community would during his life select some one to be their head; however, out of respect for the venerable sufferer, this was not carried out officially, but after the death of Adams, Edward Johnny, son of one of the seamen of the *Bounty*, assumed the Presidency of the little colony, while renouncing the honorary title.

Under him the Anglo-Tahitian settlers enjoyed visible prosperity, when an unexpected event destroyed for ever the

* One main source of anxiety, which determined Adams to request the good officers of the British Government, was the scanty supply of drinking-water. There was at this time only one available spring of fresh water, and this supply was so small that two quarts of water were all that each family could be allowed during the day.

placid tenure of their existence, and compelled them to leave their beloved island. On his return to Europe, the gallant Beechy, intending to confer a real benefit on the gentle people in whom he felt so lively an interest, had laid before the British Government Adams' dying request, in consequence of which an English man-of-war and a transport made their appearance from Port Jackson, Australia, in March, 1831, to transport the whole of the inhabitants to Tahiti, which European nations regarded as the most suitable spot for them to be settled in. The Pitcairn Islanders were in despair, for, when made aware of the steps taken by "Father Adams" through Captain Beechy to get them placed under the British Crown, the good folks had long before written to England and urgently entreated that they would not remove them from their own hearth; but their entreaties seem not to have reached the proper quarter, or else to have received no attention, and now that the two ships lay off the island, evincing the interest taken by the English Government in their future destiny, they could not venture on refusing to embark. They had to content themselves with the assurance that they should be restored to Pitcairn Island, in the event of their not finding themselves comfortable in their new asylum.

By the end of March, 1831, they reached Tahiti. Although Queen Pomáre had set apart a certain tract of land for them to settle in, and manifested the warmest interest, and though the usually frivolous but hospitable and kindly Ta-

hitians received the new arrivals in the most cordial manner, the pure minds of the latter were so disgusted and revolted with what they saw at Papeete, that the very day after they disembarked, they loudly declared that under no circumstances would they remain there, and therefore claimed to be taken back to Pitcairn's Island. When it was found that all representations failed to induce them to make any stay at Tahiti, a few Protestant missionaries got up, in conjunction with some English residents, a fund of some £400, with which they chartered a schooner, for the purpose of restoring the Pitcairn Islanders to their rocky paradise in the solitudes of the Pacific, for which they felt such an irresistible home-sickness. In August of the same year the return voyage took place. During their short stay at Tahiti, fourteen had died of sheer grief and anguish of mind, like plants that had been transplanted into a foreign soil. Although only six months absent in all from Pitcairn Island, there was not one single family but had to regret the loss of some beloved member!

Despite their bitter experience hitherto, the old terror of over-population again arose in the bosoms of the Pitcairners, after a series of prosperous and peaceful years, and a wish began to be frequently expressed that at least a portion of the inhabitants could be drafted off to some other island. In order to comprehend and do justice to this feeling, one must place oneself in the position of a resident on an extremely small solitary island in the ocean, which is often

for years cut off from any communication with the outer world, and every corner of which has already been cultivated to the utmost: would it not be a pardonable anxiety, which in view of such circumstances should fill with gloomy forebodings the heart of every prudent head of a family, and make him hesitate between love for his native soil, and the desire to preserve independence and comfort to his family?

A second attempt at acquiring a settlement beyond their own confined limits was not more fortunate than the first. The Government of England, with the meritorious care for the interest of even the poorest of her subjects in the most remote regions of the globe, which is one of her noblest characteristics, once more dispatched a ship of war to Pitcairn, with orders to transport the inhabitants to Norfolk Island between New Zealand and New California, of the marvellous climate, vegetation, and fertility of which the most glowing accounts were in circulation. A few plants which had been conveyed thence by English navigators to Europe had excited universal astonishment—such exquisite forms of vegetation, it was thought, could only form part of some landscape of marvellous beauty and richness. And one must, in fact, have seen the *Araucaria excelsa*, the well-known Norfolk Island pine, in order rightly to understand these raptures. Such an island, it was thought, with an equable climate, fertile, and of adequate extent, must be the very thing for the idyllic life of such a people as the Pitcairn Islanders. Adams' descendants and their kinsmen accordingly suffered them-

selves to be persuaded into trying this change, the more so that their own island was beginning, as had long been foreseen, to prove too small for them, and the possibility of a deficiency of food began to assume an appalling air of probability.

In May, 1856, the British Government expended £5000 in sending another ship from Sydney to Pitcairn, to carry out the wishes of the inhabitants and their advocates in England, by transporting the entire community to Norfolk Island. There were in all 193 souls, viz. 40 men, 47 women, 54 boys and 52 girls, who now said farewell to the land of their birth. But on this occasion also the elder seemed to feel an anticipation of their speedy return, and before they embarked they took every possible precaution to ensure their finding their dwellings in the same order in which they were leaving them. They placed written bills on the doors of their houses, in which they requested all visitors to abstain from injuring their property, as they were only leaving the island for an indefinite visit, and would very speedily return to their old quarters. They killed all the pigs and dogs upon the island, lest the first should violate the sanctity of the grave, and the latter injure their flocks and herds.

By the ensuing harvest-time they were installed in their new home. Provided for the first time by the English Government with the requisite means of subsistence, as well as agricultural implements, &c., they seemed to feel themselves quite at home, and their friends and well-wishers in England

began to indulge hopes that they had at last found at Norfolk Island the long-wished-for asylum, and as energetic and industrious land-owners would at once benefit themselves and develope the resources of the island. These pleasing anticipations were the more natural, as for a number of years nothing more was heard of the "Pitcairn Islanders," except that everything was going on prosperously and quietly in the new colony.

While the *Novara* was lying at Sydney, in November and December, 1858, intelligence was received respecting these colonists, in whom, on account of their singular history, the deepest interest was felt there as elsewhere. In the (then) Governor-general's (Sir W. Denison's) residence we saw a photographic group of the islanders, male and female, whose pleasing expression involuntarily excited profound sympathy for the persons thus represented. Since their arrival in Norfolk Island there had been no more definite news concerning them.

At New Zealand, in like manner, nothing was known of what they were doing. At St. John's College, Auckland, we quite accidentally fell in with two young well-grown men, who we were told were Pitcairn Islanders in the course of education for missionaries. There was in their faces a mild, half-melancholy expression; they spoke perfectly good English, but in the most ordinary conversation used Scriptural phraseology. It was known that when he began to instruct the younger members of the community Adams possessed

only a Bible and some religious books. Thus they not only were instructed in the Book of books, but even in ordinary life the biblical phraseology and peculiarity of expression still clung, even to the fourth generation.

During our visit to Tahiti we heard one day that the schooner *Louisa*, Captain Stewart, had just arrived from Pitcairn Island, whither he had transported a number of its former inhabitants from Norfolk Island. We resolved to get speech with this gentleman, in order that we might gather from his own lips the details of his voyage. It so chanced that he stayed in the house of an English settler, who had let to us a small palm-hut during our stay at Papeete. We very soon struck up an acquaintance. Captain Stewart, a genuine Englishman in appearance, character, and expression, explained to us in brief terms that he had at their own cost transported a number of the Pitcairners from Norfolk Isle to their old home, and, during the voyage, which lasted some weeks, had kept a pretty full journal. "But," continued the truth-loving captain, "I am not at present in a position to give you any circumstantial details repecting them. Business compels me to go over to the island of Eimeo, and by the time I return hither the *Novara* will be well on her way to Valparaiso. I am likewise bound, however, for the west coast of South America, in fact to Valparaiso, and shall probably arrive there a few weeks after you. I promise you, during my voyage thither, to jot down the most important data I can recall respecting these islanders, and they shall be placed at

your disposal immediately on my arrival in Valparaiso." We thanked Captain Stewart for his kindness, and we parted with a vigorous "shake hands" of genuine English cordiality.

The reader will see in the subsequent chapter how honourably the worthy skipper kept his word. Two months later, after we had sailed over 5220 nautical miles, we were handed the promised information; but to preserve uniformity we shall present the reader at once with this comprehensive sketch of the present state of Pitcairn and its amiable inhabitants, as furnishing the latest particulars of the islanders, which are now for the first time published in Europe.

"Captain Stewart had been in communication with the inhabitants of Pitcairn in November, 1858. Landing at Norfolk Island, in the course of a voyage in the South Sea, the community chartered his schooner to convey certain of their number back to Pitcairn Island. They declared they had only quitted Pitcairn in consequence of the glowing description given them of Norfolk Island. Instead of the promised superabundance, they could only by dint of severe labour provide themselves with the ordinary necessaries of life. Their staple of food was sweet potatoes and a small quantity of meat, in fact, a single bullock, which by permission of Government they slaughtered once a week, and the flesh of which served the entire community.

"Besides all this, the rudeness of the climate did not seem to suit them, and diseases seemed to become more and more frequent among them. In fact, it turned out that the natural

advantages of Norfolk Island had been persistently overrated by early visitors, the consequence being that the poor Pitcairners found themselves woefully disappointed in the expectations they had formed of their sojourn in this terrestrial paradise.

"The scenery of the island is everywhere lovely, and the peculiarity of its vegetation, especially when seen from seaward, exercises a kind of fascination over the beholder; but the ground, which is the most important consideration for the settler, who is bound to the soil, not by the sublime and beautiful, but by the useful, is very far from being fertile, and the sole descriptions of produce extensively raised are maize and sweet potato. Wheat and barley are so exposed to frost and mildew that only one crop out of several proves remunerative, and the potato makes so small a return, in consequence of the amount of seed and labour required, that it is only cultivated as a rarity. Even the commonest vegetables are scanty and of poor quality, and under these circumstances it is at least probable that the cultivation formerly carried on by the English convicts and criminals, in which the results would naturally exceed expectation, had led to the mistaken idea that Norfolk Island was fertile. It is about 9000 English acres (14 English square miles) of superficial area, of which about 1500 acres only are cleared, and but one-half of that, or one-twelfth of the whole, suitable for cultivation.

"It is just possible to land on either the south or north sides, if *the water be smooth;* the little village is situated near

the former, and consists of about 100 'block-houses' of various dimensions. There are also a number of stone-buildings upon the island, which speak of the times when the island was a penal settlement, and comprises a large prison for about 2000 convicts, besides the necessary barracks for the military guard; a church, a hospital, magazines, and dwelling-houses for the Governor, the chaplain, the inspector, the officers, &c., buildings which, taken in conjunction with the grave-mounds and frail tombstones of the adjoining churchyard, tell a mournful tale to the visitor of the earlier inhabitants, and of the tragic fate of many thousands who must have toiled and sunk under their hopeless doom in Norfolk Island.

"The Pitcairn Islanders occupied the houses constructed for the Government officials, and had not shown the slightest attempt to settle upon spots suitable for agriculture. When the British Government made the island over to them to be cleared and reclaimed there were about 2000 head of sheep, several hundred cattle, 20 draught horses, and a large number of swine and poultry. In addition to this handsome present, Government gave them provisions for six months, besides agricultural implements, seeds of various useful plants, and vegetables of every description. There were also two sloops, of about 15 tons each, left at the island, besides a complete stock of household necessaries. All the above were made a free gift of to the islanders by the British Government, which merely reserved to itself a part of what used to

be the prison-buildings, in case it should wish to devote them to its former purposes at some future period.

"When Captain Stewart visited Norfolk Island, in 1858, the population consisted of 219 Pitcairn Islanders, and two English soldiers with their families, employed as surveyors by Government.

"On the day of his arrival a public meeting was held, at which the chief magistrate of the community presided, and the females played a not unimportant part. It was arranged that for a certain sum Captain Stewart should convey 60 of the Pitcairn Islanders to their old abode. A special motion for the purpose was put to the meeting with all due form, seconded, and reduced to writing on either side. At the same time it was imperatively ordered that all should be ready to embark on the fourth day thereafter, and as there is but one, and that not a very safe, anchorage off the whole coast of the island, the Captain stood off and on in its neighbourhood.

"The eve of the fated fourth day found the delicate question still unsettled of who were to be the happy 60, so many had set their hearts on forming part of the expedition. A second meeting was convened, this time under the presidency of their chaplain, but the only result was to defer for one day the embarkation. During this entire period the poor people were in the utmost excitement. The place of embarkation was covered with the baggage of all who were desirous of

returning to Pitcairn's Island; but, as in consequence of their original descent there have been such frequent intermarriages, and hence such close relationship, reminding one of the clans of Scotland, it was impossible to decide who was to go and who to remain. At length, on the expiry of the last day left them to decide, it was arranged that in the event of Captain Stewart proving unable to take off two entire families or clans (about 100 persons), only one should be taken to Pitcairn. The Captain hesitated at venturing on so long a voyage with such a number of souls in so small a vessel. He therefore took on board only 17 of the islanders, men, women, and children, whom he landed at Pitcairn Island, after a voyage of 42 days, amid tears of rapture at finding themselves on the well-remembered spot. The notifications they had attached to their doors on leaving had not entirely answered their expectations. During their absence several of the huts had been gutted, and a large number of the oxen had been carried off. However, it was not altogether malice or wanton destruction which had diverted to other purposes their cherished household gods. Shortly before their arrival, in a wild night of storms, the American clipper *Wild Wave* had been wrecked on a coral reef, not far from Pitcairn, and a part of the crew, having succeeded in reaching the island, were compelled to avail themselves of the building material, thus collected to hand for them, with which to construct a boat, in which, with true sailor-like hardihood, to face the winds and waves once more. For this purpose the church and some

twenty huts came handy, while a plentiful stock of goats, sheep, and poultry were roaming at large about the island. A considerable quantity of valuable tropical fruit was hanging ripe upon the trees, and seemed only awaiting the return of the former owners to be plucked for use.

"The baggage was speedily landed, and an unusual activity prevailed, with the view of getting housed as speedily as possible. It was plain these poor people had never expected again to get possession of a domain which they had abandoned through ignorance and misrepresentation. The reverent air with which they entered their huts and gazed around with keen scrutinizing glance to see if all had been left in its former state, showed with what love and veneration they clung to this gloomy possession of their progenitors, with all its melancholy traditions, which seemed to exercise over them a deeper attraction than the majestic ruins of a princely ancestral castle, with all its world-famous memories, sometimes does upon the youthful representative of its pristine glories.

"The important part played by the women during the consultations held at Norfolk Island seemed anew to be claimed by the fair sex at Pitcairn, and Captain Stewart could not sufficiently wonder at the high social position they occupied in the little community. The ladies for their part made the most of this privilege, and their utmost efforts were directed towards justifying it by their activity in household matters."

Such is the latest that is known as to the Pitcairn Islanders and their singular destiny. It is not at all improbable that the majority of their kindred will gradually find their way back to the original seat of their race, there to end their days.

Making all allowance for their aptitude and their natural preferences, their innate timidity and lack of decision must leave a painful impression upon every impartial mind; but this prominent trait of character seems to have a deep-seated physiological basis. The "Mutiny of the *Bounty*" was followed by a natural re-action. The ever-present dread of discovery, which constantly haunted Christian and his criminal associates, and to their dying day deprived them of all tranquillity of mind, was transmitted, but in a milder form, to their descendants, and struck root in their bosoms in a feeling of dependence and excessive timidity, which prevented even their grand-children from attaining tranquillity, and from becoming not to say intellectual, but even useful, members of society. Will, courage, independence, seem for ever to have fled from the breast of the Pitcairn Islanders, who, on the other hand, have many virtues well calculated to excite our sympathies, and of whom especially the founder of this simple-minded community, the energetic, clear-sighted Adams, has, by his actions, proved anew the truthfulness of the saying, "Whoever has the power to WILL (a thing) can perform miracles!"

Our voyage to the west coast of America was speedy, though rather stormy. Seldom were the heavens clear, and alternately with violent rains, we felt that discomfort arising from constant motion, the result of heavy seas and tremendous rolling, to which the voyager is so frequently exposed.

On 4th April, at night, while shortening sail, owing to the violence of the wind and the threatening aspect of the weather, one of the crew was precipitated from the main-top-gallant-yard, a height of 125 feet above the deck. Being caught as he fell among the shrouds and rigging, he succeeded in catching hold of one, and so with diminished force fell into the main-top, a fall of 69 feet, upon which some of his comrades, going to his assistance, rescued him from further danger, when he was found to have suffered so little, that he returned to duty the following day!

On the 11th, without any particularly heavy weather, the main-yard suddenly snapped in two. On a more minute investigation it was found that it had become greatly weakened by dry rot, so much so that it could no longer be used. It was fortunate this took place during ordinary weather, so that the two fragments could be lowered without much difficulty. In a high sea and heavy weather, such an accident is often attended by most lamentable results, for two pieces of timber, each above 40 feet in length, measuring 21 inches at the thickest, by 8 inches at the smallest diameter, and several thousand pounds in weight, can hardly come rattling down

upon the hull of the ship without inflicting serious injury, and endangering the lives of numbers of men.

As we had no spare main-yard, we had to sling a smaller one till our arrival at the nearest port, giving rather a singular appearance to the vessel, but without perceptibly affecting her speed.

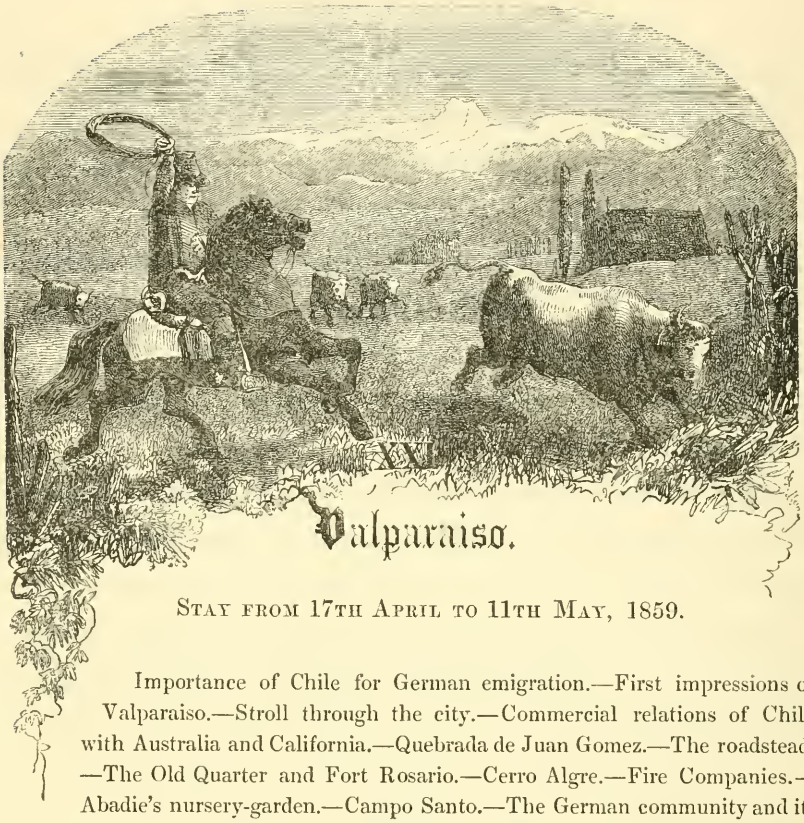
In 34° S. and 76° W., the temperature of the ocean was observed suddenly to fall 3°.1 Fahr., and we now, for a distance of about 200 nautical miles, were in what is known as Humboldt's current, which carried us towards N. by W. at a velocity of from half to three-quarters of a mile per hour. Our experience of this renowned current, so far at least as regards the season of the year, and the latitude and longitude in which it is fallen in with, are widely different from those statistics which represent it as sensibly felt at a distance of from 800 to 1000 miles off the W. coast of South America.

On the 16th, the faint outline was visible of Aconcagua, the highest of the Chilean Andes, and a few hours later we made the light-house of Valparaiso. A light breeze with a heavy sea made it seem advisable not to run in during the night, the result of which was that on the following morning it was only by the efforts of some tow-boats dispatched to our assistance by the commander of H. B. M. ship of the line "*Ganges*," and the French corvette "*Eurydice*," that we were enabled, by 3.30 P.M., to reach Valparaiso in the midst of a profound calm, when our anchor was let go in 25 fathoms, good hold-

ing ground, in an excellent roomy berth, away from the bustle of the merchantmen.

The voyage from Tahiti, 5000 nautical miles, was accomplished in 118 days, and although a considerable portion must be marked as "lost," owing to our having steered for the zero point of magnetic declination, we yet arrived at our destination sooner than merchantmen which left Papeete before us, or in company, but had steered south of the Paomotu group.

Mr. Flemmich, the Austrian Consul-general at Valparaiso, immediately sent our letters on board, but the regular packet, which we had expected to find here before us, had not come in, and the delay served to double the anxiety of all on board, in view of the political clouds that were hovering over our native land.



XV.

Valparaiso.

Stay from 17th April to 11th May, 1859.

Importance of Chile for German emigration.—First impressions of Valparaiso.—Stroll through the city.—Commercial relations of Chile with Australia and California.—Quebrada de Juan Gomez.—The roadstead.—The Old Quarter and Fort Rosario.—Cerro Algre.—Fire Companies.—Abadie's nursery-garden.—Campo Santo.—The German community and its club.—A compatriot festival in honour of the *Novara*.—Journey to Santiago de Chile.—University.—National Museum.—Observatory.—Industrial and agricultural schools.—Professor Don Ignacio Domey Ko.—Audience of the President of the Republic.—Don Manuel Montt and his political opponents.—Family life in Santiago.—Excursion trip on the southern railroad.—Maipú Bridge.—Melepilla.—The Hacienda of Las Esmeraldas.—Chilean hospitality.—Return to Valparaiso.—Quillota.—The German colony in Valdivia.—Colonization in the Straits of Magellan.—Ball at the Austrian Consul-general's in honour of the *Novara*.—Extraordinary voyage of a damaged ship.—Departure of the *Novara*.—Voyage round Cape Horn.—The Falkland Islands.—The French corvette *Eurydice*.—The Sargasso sea.—Encounter with a merchant-ship in the open ocean.—Hopes disappointed and curiosity excited.—Passage through the Azores channel.—A vexatious calm.

The free State of Chile enjoys a higher degree of tranquillity than any of the former Spanish dependencies of South Ame-

rica, and in climate, in fertility, and in liberal institutions, transcends all others in affording the European emigrant the best prospects of a prosperous future.

Chile possesses a constitution which many a European state might envy, the civil freedom, which forms the basis of all laws, and just now is so eagerly debated and investigated in some parts of Europe, having been in practical operation here for upwards of a quarter of a century, during which it has materially contributed to develope the resources of the country and the prosperity of its inhabitants. Owing to the disturbed state of the American Confederation, hitherto the El Dorado of European emigration, countries such as Chile, of an extent similar to that of England and Greece together, and with a population barely exceeding one million of men, possess the very highest attraction. True, at the period of our visit the long-enjoyed political tranquillity was for a while disturbed by a revolutionary convulsion, but it has cost neither time nor trouble to suppress it, upon which the leaders, more ambitious than patriotic, took to flight, and public order and safety were reinstated upon the broad basis of a constitution, which was wisely drawn up so as to admit of keeping pace with the times.

We beheld Chile under anything but its normal favourable aspect; many of the leading families of the country had been plunged by political troubles into grief and mourning; trade was falling off; the ordinary buoyant disposition of the Chileno had given place to painful anxiety; yet all we

heard and saw during our stay at so unpropitious a period, only served to strengthen our conviction that a great and splendid future awaits this delightful country.

He who merely lands at a seaport such as Valparaiso, and wanders through its lengthy but elegant streets, carries away with him no just conception of Chile and the life of the country beyond the Andes. Everything about the town, houses, shops, and population, has quite a European aspect, so that the stranger walking through some of the streets with their lofty grey edifices, gay signs, and large and splendid magazines, abounding in everything that can minister to human luxury, might readily fancy himself transported to some northern European capital. Nothing is here to tell of its being the native country of the Araucanian, nothing recals that singular national aboriginal type, and it is only when contemplating the majestic forms of the surrounding landscape that he can realize that he is actually in the proximity of Andes, "giant of the Western Star."

One of our first walks through the city, the buildings of which extend, row after row, for a considerable distance along the bay, and surmount the hillocks (*Quebradas*) which rise at a short distance from the shore, brought us to the *Aduana*, or Custom-house, one of the most extensive, beautiful, and commodious buildings in the city, which, commenced in 1850 by a Frenchman, was finished six years later by an American, named John Brown. The ground on which the various buildings are erected was quite recently gained from the sea

by embankment, as was also done in the case of the existing *Plaza de Armas*, and the wide and graceful *Calle de Planchada*, both which sites were under water less than twenty years since!

The Custom-house buildings, including the vast solid warehouses, cost the State more than 1,000,000 Spanish piastres (£210,000), but form the finest and most convenient edifice of the kind throughout South America. An enormous quantity of the most valuable merchandise, which used to be scattered about among private houses or disposed of, are now stored in large, dry, well-lighted apartments, and can without much trouble or delay be got at and taken away. About 200 officials are at work in spacious offices registering the trade of the State, which is in a very flourishing state, owing to the immense importation of the most various foreign fabrics, paid for in a not less extensive export of Chilean products, chiefly corn and precious metals. The start taken by the country in commerce and agriculture, as also the development of its natural resources, dates from the period of the discovery of the Californian gold-fields. Chile, so admirably suited for agriculture, very speedily became the granary of the gold-country, and set about making the most of its manifold advantages. Wheat, barley, beans, increased so much in value, that many fields which, on account of comparative poverty, had been suffered to lie fallow hitherto, now got under cultivation, and the former scanty means of the majority of the proprietors of the soil was at once exchanged for

unexampled prosperity. The influx of specie did not fail to stimulate activity in every other occupation as well, and was mainly instrumental in working the mines more systematically, and thus making them more productive than hitherto.

The exportation to California speedily increased ten-fold, and within two years had increased nearly 2,500,000 piastres (£525,000).

When the gold fever had a few years later abated somewhat in California, and the settlers there began to grow grain for themselves, the Chilean exports thither dwindled away, till, about 1857, they had sunk to a minimum hardly worth mentioning. But meanwhile a second, though rather more distant, market was found for Chilean exports, by the discovery of not less productive gold-fields in Australia, the imports into which from Valparaiso, despite the enormous distance, proved so immensely remunerative that the ventures of former years to California were quite eclipsed.*

Leaving the Custom-house buildings, we climbed up the Quebrada de Juan Gomez, one of the numerous narrow valleys or clefts which, spangled on both acclivities with villas, usually thatched with shingle, impart to the environs of Valparaiso so peculiar an appearance. The most extraordinary of these is the *Cerro de Carretas*, a hill from 200 to 300 feet

* In one single year (1854), the imports into Australia of Chilean grain amounted to £630,000. In a good year Chile produces 2,500,000 fanegas (920,755 quarters) of wheat, 4,500,000 fanegas (1,855,054 quarters) of barley, and 180,000 fanegas (16,071 tons) of beans. The *fanega* varies in weight according to the article measured; thus a fanega of wheat is 165 lbs., of barley 155 lbs., and of beans 200 lbs.

high, to the slopes of which cling a variety of filthy wicker huts of the poorest sort, which, regarded from a distance, have a picturesque effect. On a closer inspection, however, they exhibit utter destitution and degraded poverty. At the highest point of the steep Quebrada de Juan Gomez are some fortified lines recently thrown up, together with the artillery barracks (*Cuartel de Artilleria*), with accommodation for 800 men. The Chilean troops are pretty well equipped, but have a by no means imposing air; they appear to be patient and persevering, fit for encountering great privations and overcoming obstacles, rather than courageous, or eager for the fray. There is, in short, a total absence of "dash" about them. From the barracks one enjoys a magnificent view over the city and the environs, hemmed in on all hands by the ocean. The roadstead greatly resembles that of Trieste, and, like the latter, suffers much from N.W. winds. The merchantmen lie at anchor in pretty regular order, with the double object that, in case of a sudden "norther," they may not suffer from ships dragging their anchors, and may be able at once to make sail if necessary.

Although at the commencement of the winter season (May to October) of the southern hemisphere, when frequent storms from north and north-west make the roads of Valparaiso, if not dangerous, at least hazardous, the majority of sailing vessels make for other better-sheltered harbours along the west coast, yet there were still about 180 vessels of all sizes and every flag lying at anchor off the town. The most

unpleasant and severe months are June and July, although it is at that period less the violence of the gales than the tremendous sea, which occasionally hurls a ship, if not properly made fast, into a position of danger, and occasionally interrupts all communication with the shore for days together. A season sometimes passes over, however, without the occurrence of any elemental strife. It would be of the highest interest to be able to ascertain the periodicity of the return of severe winters, which there can be little doubt obeys some natural law.

The barometer is, at Valparaiso, a pretty correct index of the wind that may be expected. The more the mercury sinks, the more perceptible will be the N. or N.W. wind. Rain and foggy weather usually precede these winds, and continue till the wind draws somewhat to the west, upon which the mercury rises and the weather improves. North or north-west winds are, however, as a rule never of long continuance, and indeed frequently continue only a few hours, because so soon as the first burst is over, the trade-wind, upon whose limits it has encroached, soon begins to drive it before it, under the influence of an air-wave from the southward, and ships which, with the view of suffering as little as possible from north or north-west winds, keep as far from the light-house as possible, have nothing to dread from even a heavy "norther," if all proper precautions are taken, and their anchors and cables hold.*

* That ships in good holding ground and with sound tackle are in no great danger

In the harbour were the screw steamers *Maipú* and *Esmeralda*, and the paddle screw steamer *Maule*, belonging to the very insignificant navy of the Chilean Republic. From the barracks we passed up several Quebradas to the ancient "Cuartel" and Fort Rosario, two buildings remarkable enough in their way, the erection of which dates back to an early age, as they in fact belong to the period when Valparaiso had only 400 population, and was part of the assize-circuit of Casa Blanca. The latter, however, which we pass on the road to Santiago, is still an insignificant settlement, while Valparaiso has become the wealthiest and most important commercial emporium along the whole west coast of South America, and boasts a population of above 60,000 souls. There are also in this vicinage numbers of small filthy one-storeyed huts or *ranchos* built of cane, which seem as though hanging to the acclivities, and are not intended to last any time. As it rarely rains at Valparaiso, and then but little, and the temperature being tolerably mild throughout the year, the poor have little occasion to provide themselves shelter against cold or boisterous weather, or to build strong and solid habitations. Moreover, there is perceptible among the Chilean populace, as among all other Spanish Americans, an innate trait of character, in the shape of indolence and indisposition to labour, as they usually strike work for the day as

riding out even a heavy storm in the roads, is best proved by the fact, that in the inner harbour there is a floating dry-dock in use throughout the year, which, notwithstanding the occasionally severe weather while we were there, had a three-masted ship, full-rigged, masted and tackled upon it, with repairs of all sorts going on upon her sides.

soon as they have earned enough for the daily necessaries of life, which they can supply for a trifle. Nay, we are told that it is by no means unusual for day-labourers, as soon as they have earned their day's wage for their principal want, to reply in an indifferent tone to the offer of further work, "Tengo mis dos reals" (I have my two reals)! *

Not all the Quebradas, however, round Valparaiso are infested with wretched huts; some are occupied by tasteful and comfortable residences, especially the Cerro Algre, where at present a considerable number of Germans reside, and which is conspicuous for the number of elegant little villas, as also by the cordiality and hospitality there lavished upon strangers. Cerro Algre is one of the most charming, delightful, and salubrious spots in the neighbourhood of Valparaiso, with a magnificent panorama, although not so fashionable a resort as the Almendral, which, since the recent appalling conflagration of 1858, reducing within a few hours the finest portion of the city to ashes, has been rebuilt with numbers of handsome edifices, and has at the same time been widened and extended.

The frequency of fires, and the totally inadequate means and appliances for their extinction at the disposal of the authorities, led to a number of foreigners settled in Valparaiso organizing a Fire-brigade (*Pomperos*), in which the *élite* of the community shortly after were enrolled. The founders and first company were the English, after whom came the

* About 1*s.* 1*d.*; a dollar is about 4*s.* 4*d.*, and a dollar has 8 reals.

Germans, French, Spaniards, Italians, and lastly the Chilenos following suit. A hook and ladder company, consisting of English, Germans, and North Americans, was set on foot in 1850. All the arrangements are modelled after the Fire Companies of the United States. The engines were imported from New York, and cost over £800 a piece. The French displayed the greatest luxury in the splendid uniforms of their company and the elegant fittings of their very beautiful engine; the Germans, on the other hand—not always the case with them—show but a very simple attirement, but are behind no other nation in the zeal and courage with which their fire company performs its self-imposed duties.

Valparaiso is sadly deficient in suitable promenades, and consequently strangers must not be surprised, should they be invited to take a walk to the Cemetery (*Campo Santo*), in order to promenade there among cypress alleys, and pretentious-looking memorials of the departed.

The Campo Santo is situated on one of the rising grounds behind the city, and with its clumps of trees and flower-plots, looks in fact much more like a promenade-garden than a grave-yard. Each Catholic fraternity (*hermandad*) has its own place assigned it for interment of the dead. Beautiful and costly monuments are raised over some of the recent graves, like so many testimonies in marble of the influence exercised even upon the resting-places of the dead, by the accumulated wealth of the last twenty years. Close beside the Catholic

cemetery is that of the Protestants, which, like the other, is neatly laid out and kept in excellent order, but on the whole impresses the visitor less by the splendour of the monuments and the elegance of the inscriptions, than by its air of solemn simplicity.

Not far from the spot where repose their dead is the place of worship of the Protestant community, a slight but neatly-finished edifice of wood, somewhat like the "chapels" of the English colonies. This is a pleasing evidence of the tolerant spirit of the Chilean Government, in strong contrast with most other Catholic states in South America, where religious intolerance of heterodoxy goes the length of prohibiting all public profession of their faith.

Valparaiso is as badly off for fine open squares and monumental erections as for promenades. The Government Square, with its neat Exchange, and Victoria Square, with its Theatre, are neither by their antiquity, nor their general appearance, calculated to make any impression upon the traveller. There is great need of large, good hotels upon the European plan; and as there are no cheerful, comfortable cafés, to serve as a rallying-point for the male sex after the business of the day is over, the traveller is usually dependent for society upon being introduced at the different clubs, founded by the various nationalities. Of these the German was the finest; but, in consequence of their beautiful, spacious club having fallen a sacrifice to the recent conflagration, the members had to seek temporary accommodation in rather confined apart-

ments, which greatly hampered their desire to show all due honour to our Expedition. Not less cordial, however, was our reception, nor the warm interest taken by the entire German community of Valparaiso in the scientific attainments of certain of its members.* Nowhere did the old German hospitality shine forth with more serene lustre than among the Germans of Chile, nowhere is there a more splendid manifestation of the vigorous intellectual life of the good old stock, nowhere a more thorough expression of German unity in foreign countries! Exercising a powerful influence in society, as merchants, physicians, professors, naturalists, astronomers, chemists, engineers, architects, &c., the activity of the German in Chile in every avocation of life has not been without a permanent influence on the destinies of this free State, and has already left in its institutions many a trace of German origin.

One of our most pleasing reminiscences is undoubtedly that of the magnificent natural fête got up by the German residents of Valparaiso in honour of the *Novara* one heavenly Easter morning, which came off at the beautiful Quebradas of Quilpué, about twelve miles from the port. Quilpué is a station on the railroad which runs from Valparaiso into the

* We must especially remark the large and valuable zoological collection with which our natural history stores were enriched by a German gentleman, Dr. C. Seget of Santiago de Chili. With similar liberality another gentleman, Mr. Friedrich Leybold, a Bavarian by birth, now resident in Santiago, where he practises as a chemist, presented the Expedition with several valuable geological and botanical specimens.

interior, and is intended to form the communication between it and Santiago de Chile, 110 miles distant, but of which at present only the first 40 miles have been completed.

A special train, its locomotive neatly decorated with garlands of flowers and banneroles, conveyed the guests, 150 in number, to Quilpué. From this station the joyous party marched with the German flag at the head to one of the neighbouring dells, which seemed intended by nature to serve as the site of pic-nics in the open air. Here, under a number of spacious and elegant tents, we found long tables set out, which a cloud of waiters and cooks seemed engaged in loading with every delicacy that could tempt the palate.

The company wandered through the adjoining glades, or lay stretched out in the shade, in a delicious ecstasy of music and song. The alarm of war, which at the moment was booming through Europe, had found its way even to the foot of the Chilean Andes, and imparted to the festival a political feeling. Although the then state of political matters in Austria was by no means such as to fill the mind with enthusiasm for it, yet all the feelings of the German of Valparaiso were enlisted on the side of Austria in her struggle with France; less out of sympathy with her policy as then displayed than out of hatred of Napoleonic assumption.

Thus, in some of the after-dinner speeches which followed in due course, as well as in the inspiring songs with which the entertainment was enlivened, there was free expression given to this sentiment. A Bavarian physician and pharma-

ceutist, Dr. Aquinas Ried, whose house we found one of the most pleasant points of cordial re-union for the members of the Expedition, had composed a chorus for male voices, called "Welcome to the *Novara*," which he led himself with some of the members of the German Choral Union, the closing strophe of which,

"Sei einig nur Germania,
So stehest du auch einzig da,
Das grosse Vaterland!"

was received with enthusiastic applause, and was greeted with deafening cheers.

This widely-expressed sympathy for German nationality found expression in various other ways, not the least conspicuous being the marked courtesy to the Expedition manifested by the natives of Chile itself, and in an especial degree at Santiago, the capital, where public officers, naturalists, and lovers of science vied with each other in welcoming such of our number as went over to spend a few days there, and in aiding them to carry out the object they had in view.

With these scientific aims were united others of a political nature, our Commodore having been honoured with H. I. Majesty's commands to enter into a commercial treaty with the free Republic of Chile. For this purpose Commodore von Wüllerstoff had gone to Santiago in company with the Austrian Consul-General, M. J. F. Flemmich, and the author of this narrative, the two geologists and the draughtsman of the Expedition having set out thither some days before.

The journey to the capital of Chile is not among the most inviting. There are numerous crests of mountains (*questas*) to be crossed *en route*, which at many points are steep, not to speak of the bad construction of the roads, and the little care taken to keep them in order. Frequently the carriage rolls along the very verge of a profound abyss; the soil seems about to give way, gravel and stones plunge thundering down, while neither wall nor wooden railing intervenes to prevent the traveller from following them. Moreover, the vehicles in ordinary use are not calculated to diminish the perils of such a journey, especially if it is an object to arrive speedily at one's destination, when the regular national coach, the Birloche, as it is called, must be used. It is a sort of double-seated two-wheeled cabriolet drawn by two horses, while five or six horses trot alongside, which furnish the change of horses when required. The driver rides one of the horses, as in Havannah, and is wonderfully skilful in his way. He usually wears the national brown-covered *poncho* (a quadrangular piece of cloth with an opening in the centre through which the head passes), a small straw hat, linen pants, and on his bare feet enormous, heavy spurs, sometimes fastened by a piece of leather, sometimes with a mere cord.

We pushed forward without stoppage as far as Casa Blanca, one of the most ancient settlements of Chile, which, however, as previously remarked, has always preserved its village-like aspect. Here we fell in with several very handsome ladies,

elegantly dressed, each sporting a gigantic crinoline. They had come from the neighbouring *haciendas* to Casa Blanca to be present at a race-meeting. Having dispatched a hasty meal, we pushed busily forwards, and reached the village of Curacavi, where travellers to the capital usually pass the night. No great provision is made here in the shape of good inns, for considerable as is the traffic of loaded waggons, conveying merchandise and produce, the number of travellers is very limited, and even the few whom business or pleasure induces to visit the capital are for the most part natives of the country, or Europeans long resident, who usually take up their quarters with acquaintances or business connections, and are therefore exempt from all necessity to look after their comfort. Travellers who spend the night in such inns generally carry with them insect-powder, as the number of fleas and other troublesome insects is legion! !

At the capital, Santiago, the traveller is somewhat better off as regards houses of entertainment, and the Hotel Ingles (English Hotel), kept by a Frenchman, may not only boast of elegant apartments and an excellent cuisine, but surpasses all European hotels in expensiveness.*

Santiago de Chile lies in a beautiful fertile valley, and would present a much more imposing appearance, were it not that, owing to the frequency of earthquakes, the majority of the houses were built only one storey high. The long straight

* The charge for apartments of three persons (two sleeping and one drawing-room), including board, was 30 Spanish piastres=£6 6*s.* per diem!

streets intersecting each other at right angles, are in a state calling loudly for sanitary regulation; uneven, badly ballasted, with huge ruts at the sides, so that it is difficult to say whether the foot-passenger or the charioteer is the worst off. Much of this is due to the number of heavy two-wheeled *carretas* or country waggons, drawn by six or eight oxen, in which all produce is conveyed from the interior of the country to the harbour, and foreign merchandise transported from the sea-board to the capital. On our journey hither we counted 124 of these lumbering vehicles, creaking and rattling on their way; but there are on the average 300 such on the road between Santiago and Valparaiso. A good deal of the less bulky merchandise is also carried on horse or mule back.

Of striking public buildings Santiago is almost as destitute as Valparaiso, the Mint,* which dates from the time of Spanish Supremacy, being the sole building worth noticing. The city also boasts of a Plaza, a large quadrangular, open spot, of no special elegance, although it has on one side the Cathedral, still in process of erection, on the other a range of private dwellings with arcades beneath, in which nestle swarms of stall-vendors, besides several Government buildings which are concentrated here. Of public promenades, the Alameda, a long, wide poplar-alley, is, beyond all question, the finest, as well as most frequented, especially on Sundays and holidays. The period of our visit, the winter of

* The Chilean Mint is entirely arranged on the French system, and is provided with French machinery.

the Southern Hemisphere was not favourable to our carrying away a correct impression of the public walks at their gayest, especially when, as in our case, the weather is raw and gloomy, and the mournful rustle of dead leaves sounds like the elegy of departed gaiety. Thus, for example, the dam along the sides of the river, the waters of which in the rainy season swell into a furious torrent, but the bed of which was now quite dry, forms in summer a delightful walk; whereas in winter it is only visited by students, preachers meditative of their next discourse, or lovers oblivious of the elements.

There is in Santiago a surprising degree of intellectual activity, and great readiness in promoting scientific discovery. The philosophical works, which have of late years made their appearance, are deserving of the highest praise. The educated foreigner is not regarded askance here with envious eye, nor, because he happens not to be a native, kept in the back-ground, and refused admission to positions of public trust and influence; he is rather encouraged in his exertions by the example of such men as Domeyko, Philippi, Pissis, Moesta, &c. The well-known costly work in 24 volumes, describing the physical and political history of Chile, was composed by a Frenchman named Claudio Gay,* the expense of printing it in Paris being borne by the Government. The annals of the University of Chile appear in regular publica-

* "Historia fisica y politica de Chile, segun documentos adquiridos en esta Republica durante doze años de residencia en ella, y publicado bajo los auspicios del supremo Gobierno por Claudio Gay, &c., Paris, 1844, 8vo.;" besides two large quarto volumes, "Atlas de la historia fisica y politica de Chile."

tion each year from 1843, and comprise choice though miscellaneous information upon almost every topic of scientific interest.

One of the leading and most highly informed professors in this principal seat of education, Don Ignacio Domeyko, a Pole by birth, but who has made Chile his second home, very kindly acted as cicerone to our Expedition, and furnished us with most valuable details as to the present state of public instruction.

The University of San Felipe was founded in 1738, but the present system of instruction has only been in operation since 1842. The joint Council of the five professors of the faculties of philosophy and the humanities, physical and mathematical science, medicine, judicial and political instruction and theology, are intrusted with the supervision of the entire national education, each faculty having also the privilege of naming corresponding members, and in other respects occupying the position of similar institutions in Europe. The President of the Republic is the chief patron. The amount expended by the State annually in public instruction, is upwards of £120,000, an enormous amount considering the small population.*

* The results of the great attention bestowed on public instruction have not been inadequate, as is apparent from the latest statistics on the subject, according to which the average proportion of the inhabitants, who can read and write, is 100 out of every 561 of the male population, and 100 in 1095 of the females, or an average of 100 in every 823. In 1858, there were on the whole State 950 schools, attended by 39,657 scholars (viz. 27,288 male and 12,369 female). There is, however, a difference in these

The University is also charged with the custody of the national library of 32,000 volumes, embracing works upon every subject of scientific inquiry,* and the museum of natural history, in which are very complete ethnographical and geological collections. The most remarkable object in the latter is undoubtedly the native stag, *Huemul,* or *Guamul* (*Cervus Chilensis*), which figures conspicuously on the Chilean escutcheon, and was long regarded as a fabulous animal, as it had never been seen alive. However, in the year 1833, the specimens (male and female) at present in the museum were shot in the Cordillera de Campania, within a short period of each other.†

The observatory was in temporary quarters on an eminence in the midst of the city, but within a few years the new building would be completed, which was being constructed by Government for astronomical purposes, outside the town not far from the school of agriculture. The instruments in use were chiefly provided by the well-known North American traveller Sillis, who for many years carried on astronomical observations for the American Government in South America, especially in Chile, and when his labours were completed, left his instruments with the Chilean Government by way of indemnity. The management of the observatory is intrusted

two statements of 6 per cent. The proportion of females to males *attending school* is 45 to 100; of those able to read and write, of 51 females to 100 males.

* There are in the whole country 37 public and 12 private libraries (including in the latter only such as are really worthy of the name).

† See Gay's History of Chile, Zoology, vol. i. p. 161.

to Dr. Moesta, a German astronomer well-known in astronomical circles.

The school of Technology (*Escuela de Artes y oficios*), founded in 1845 by a French gentleman named Jariez, and, like the preceding, assisted by a grant from Government, has met with great support and success. In this eminently practical institution upwards of a hundred pupils are being taught the construction of machinery, and the various processes connected therewith, the children of poor parents having a preference. The pupils are boarded, lodged, and clothed gratuitously, and have therefore nothing to do but to remain four years in the establishment, after which they serve Government six years longer, assisting in the public works at a given remuneration, or if there should be no need for their services in the latter department, they are at liberty immediately on the expiry of their apprenticeship to follow what occupation they please. One young Chileno was pointed out to us who had risen from being a pupil to the position of foreman, and was now engaged in imparting instruction in drawing and mathematics.

As important in its way as the Escuela de Artes, and equally useful in the interests of science and industry, is the *Quinta normal* for the landed proprietary. This model farm, founded in 1851, and arranged upon the French system, is situated outside the town, and consists of a tolerably extensive plot of land, which includes within its limits the new observatory and the botanical gardens. The present director

is a graduate of the Ecole Centrale of Paris, and his indefatigable activity speedily insured the prosperity of the undertaking. It is divided into two departments, a school of agriculture proper, and a veterinary college. The course, which comprises agriculture, botany, and treatment of diseases of animals, besides the elements of chemistry, physiology, geology, zoology, and geometry, besides geography and drawing, extends over three years, every pupil educated at the expense of the State being required to devote six years to the public service. Government has reserved to itself thirty free presentations, which it may increase to sixty.

The small but well-arranged museum contains an admirably selected collection of the most important esculents and grasses suitable for foddering cattle, as also the conditions of soil which are best suited for growing these, besides a number of different fruits, executed in *papier maché*, with remarkable fidelity to nature, belonging to trees and plants, cultivated at the Institute, with the purpose of ultimately selling them at the proper time to farmers, and thus not only do justice to agriculture as a science, but increase its own revenue, not to speak of the benefits, direct and indirect, to the country at large. The purchaser is thus enabled to judge for himself what description of fruit will be likely to prove most remunerative to him, while the establishment at the same time realizes a considerable sum by this sale of seedlings, plants, and seeds, in a country where hitherto so little attention has been bestowed on high-class agriculture.

The zealous and far-seeing director is also endeavouring to induce the Chilean landowner to grow turnips, and other tubers, which might be used for foddering the cattle in winter, and so lead to a more economical system of cultivation, and consequent improvement of the race of farmers themselves. At present, where this kind of farming is utterly unknown, as soon as winter sets in, many a landowner finds himself compelled, year after year, to sell or kill his cattle owing to want of fodder, while he himself goes out as a day labourer, till the return of spring. The introduction and extension of such a system, which would enable him to maintain his herds and flocks all the year round, would put a stop to his present unsettled mode of life, improve his farm, and impart increased comfort and security to every relation of his business.

At this *Escuela normal* we likewise found the sorgho, or Chinese sugar-cane, in course of cultivation with great success. Though the temperature is occasionally so low in Santiago as to form, during the winter, ice* about two lines in thickness, the sorgho does not seem to suffer any damage, but gives its three crops each year, besides being much used for fodder. The first seeds of this species of grass, which has within four years made the circuit of the globe, and is now profitably cul-

* The whole consumption of ice used in Valparaiso and Santiago is supplied by American ships, which take in their cargo at Boston, and sell it here at about 2½d. per lb. It is cheaper to import the ice from America round the Horn than from the Andes, though the latter are only 50 or 60 miles distant, and though ice is found on these at certain seasons at an elevation of only 6000 feet.

tivated in almost every part of the world, were imported into Chile from the free States of North America.

Professor Domeyko, who possesses a most admirable geological and mineralogical collection, presented the Expedition with a choice selection of interesting and costly ores from the copper, silver, cobalt, and quicksilver mines of the country; and although the rich stores of publications and geological specimens with which the director of the Geological Institution of the Austrian Empire, Counsellor Haidinger, had provided for the purpose to present them to scientific institutions in the different foreign countries visited, was already exhausted and done away with, yet we had at least the satisfaction of learning that the Imperial Institute of Geology,* whose eminent director has extended throughout the world the renown of Austria, as a pioneer of geology, maintains already an active correspondence with the managers of the museum of the Chilean Republic.

Very soon after our arrival at Santiago, our Commodore was honoured with a special audience by the President of the Republic, H. E. Don Manuel Montt. The Commodore was accompanied by the Austrian Consul-general and the author of this narrative. The reception came off in a plain but

* Mr. Haidinger, who at the very first exerted himself to the utmost of his ability and patriotism to promote the objects of the *Novara* Expedition, was so thoughtfully kind as to provide the geologist attached to it with a number of copies of publications of the Imperial Institute, as well as a corresponding number of neat little specimens of tertiary petrifactions from the Vienna basin, for the purpose of presenting them to kindred institutes in different quarters of the globe.

elegantly-furnished apartment of the palace-like Government House, the style of which is quite modern. Don Manuel Montt, a short, under-sized gentleman, with dark strongly-marked features, and straight, somewhat bristly, hair, had during the recent troubles displayed more courage and energy than his external appearance would have led one to expect, and used his dictatorial authority with such discretion and prudence, as to excite the astonishment and respect of all well-wishers of his native land. He was attended at the interview by the Minister of Foreign Affairs, Don Jerónimo Urmeneta, a man of frank, attractive manners, whose youth was spent in the United States, and who speaks English fluently.

The conversation turned chiefly upon the proposed commercial and navigation treaty projected by the Imperial Government, a sketch of which in the Spanish language was read over to the President by the Commodore. Don Manuel (as the highest authority in the free State of Chile was called by the people) expressed the utmost readiness to carry out this arrangement, and repeatedly avowed his wish to enter into intimate relations with the Austrian Government, and execute all necessary papers, which could assist an object fraught with such benefits to both nations. He also spoke of the desirability of endeavouring to increase the intercourse between the scientific institutes of Chile and Austria, and in token of the interest he took in the objects of the Expedition, presented a copy of Gay's splendid work, as also

an extensive collection of all the historical and statistical papers illustrative of Chilean history during the last ten years.

The hope indulged by the Commodore of being able to get the preliminaries of the Treaty signed before our departure, were unfortunately frustrated by the serious political events which then entirely occupied the attention of the various members of Government. It was necessary by moderate measures and an energetic policy to crush out the Revolution, which had broken out about two months prior to our arrival, before it had attained uncontrollable dimensions. The insurgents in this case were not vehement hot-headed Republicans, desirous of further liberty, but reactionary Ultramontanes (of whom there always are some, even in a Republic), who wished to overthrow the existing Liberal Government, and substitute in its place a more flexible cabinet, more dependent upon party tactics. The dread lest the insurrection should spread till it resulted in civil war, which would throw back for years the prosperity of the country, proved to be well-grounded. For several of the most prominent and distinguished citizens of Chile, as also the clerical party always so powerful in Spanish American colonies, had united with the insurgents, whose youthful and ardent leader, Don Pedro Gallo, belonged to one of the wealthiest and most influential families in Chile. He had already assumed a threatening attitude in the northern provinces, where his family was held in high consideration, and had cut off all communication with the mining city of Co-

piapo. His mother, a lady some sixty years of age, harangued her son's troops from the balcony of her house, and repeatedly excited her auditory by shrieking out the thrilling assurance, that "she would sacrifice her last farthing would it but ensure the downfal of the existing Government, and the return to power of the party of the *Peluqueros*" (literally wig-makers, or Whigs, who in Chile are regarded as adherents of the Conservative, or rather reactionary party).

Of the immense sums which ambition and party rancour are willing to sacrifice in Chile, some idea may be formed from the fact that the Gallo family, at the commencement of the insurrection, engaged to devote their whole fortune, estimated at more than £600,000, in promoting the aims of the revolutionists. Fortunately for the pecuniary interests both of the family and the State, it was nipped in the bud, before any enormous expenses had been incurred, although it must be confessed that also in Chile making war is a most costly pastime. The Intendant of Valparaiso, Don Joaquim Novoa, informed us that the cost of maintaining the highly-paid Chilean army, which does not number above 8000 men, amounts to 500,000 dollars (£100,000) A WEEK!!! considerably more, proportionally, than four times the estimated cost of the highly-trained British army.

Our evenings in Santiago were usually spent in private circles, and we found ourselves in no small degree astonished at the elegance and luxury which were visible, both in the fitting up of the reception-rooms and the toilettes of the guests.

It is true, we associated with the wealthiest and most distinguished families in the country, but we had not expected to find the subdued but exquisite French taste so universally prevalent. The external aspect of the houses of the Chilean patricians is rather massive than elegant. The heavy iron grating which surrounds the wide lofty windows leave a disagreeable gloomy impression. The large quadrangular court, or Patìo, enclosed by the bed-chambers, and which is common to every Spanish American house from Chile to Mexico, is intended less for the passage of air and light to the various apartments than as a place to fly to in case of an earthquake (which, however, within the last 20 years were of rare occurrence in Chile and of no great importance), whence it would be easy to escape. Usually the reception-room has no cost or pains spared to embellish it; every object or article of furniture in it being designed to produce a certain effect. The expense and risk attending the transport of a large mirror or pianoforte, or other article of similar value, from the factory at Paris to its destination in Chile, is enough to make the visitor open his eyes with amazement at beholding them there!

Conversation, which, owing to the limited information of the ladies, usually turns in South American drawing-rooms upon the most common-place subjects, is marked in Chile by all the interest and vivacity consequent on the important influence exercised by the fair sex over the politics of the country, which prefers debating important political events to idle chatter and ordinary talk.

Even more agreeable than the evenings we spent among the patrician circles of Santiago, were those which we passed with an Austrian gentleman, Dr. Herzl, settled here some ten years, and with some German-Spanish families. Here everlasting politics, or rather party squabbles, had not, as in the native *salons*, banished music and song, the latter being cherished as a means of rising out of the hurly-burly, and keeping the annoyances of public life, for the moment at least, at arm's length.

In Chilean salons nothing was talked but politics; here the bent of conversation was towards literature and art, and, climax of the evening, the beloved melodies of our native land. Madame Z——, a native of Madrid, a second time married to a German, is a downright musical prodigy. In her youth she had studied at the *Conservatoire* in Paris in company with Madame Malibran, and although now 54, and the mother of 16 children, she still entrances by her clear ringing voice, and the charm of her exquisitely appreciative intonation.

The chief engineer and director of the southern railway (Ferro Canil del Sur), a North American gentleman named Evans, a graduate of West Point, had the kindness to invite some members of the Expedition to visit the Maipú Bridge, distant some 17 miles from Santiago, and accompanied them in person on their excursion to this the most interesting engineering work of the line. We set off at 1 P. M. by one of the ordinary trains. The road is intended to unite Santiago

with the very productive district of Talca, a distance of 180 miles, and is destined to exercise a most beneficial influence in improving the position of the peasantry.

The drive through the valley of Santiago is exceedingly interesting, as the line keeps close beneath the Cordillera through nearly its entire length, thus revealing to the gaze of the astonished traveller a succession of Alpine landscapes, such as one might behold in crossing the Semmering Alp. The ordinary rate of travelling in Chile is 25 miles an hour, but the expresses occasionally run at the rate of 60 miles per hour. As the splendid pastures on either side are grazed by innumerable herds, some of which were constantly straying upon the line, the item for injury done to cattle used to assume serious proportions, owing to the negligence of the drivers, till the directors, under the advice of Mr. Evans, offered a premium of 30 dollars a quarter to any engine driver who should during that space avoid killing any of the cattle: a singular regulation, but which put a stop to the evil. The line is solidly constructed, but very simply equipped, the waiting-rooms at the different stations being entirely deficient in that luxury which the traveller is accustomed to on first-rate European lines. But it tells in favour of the dividend.*

* The lines of road already in operation or projected throughout Chile are as follows:—

a. From Valparaiso to Santiago, 110 miles, constructed at the expense of the State, and estimated to cost $7,150,000 (£2,860,000). This had been opened when we were there, as far as Guillota, 30 miles, but the whole was to be finished by 1862.

b. From Valparaiso to Talca (180 miles), and

The splendid and substantially-built iron bridge thrown over the Maipú here, 1500 feet wide, at an elevation of 1822 feet above the level of the sea, was like everything used on the line, with the exception of the wood, imported from North America. Of the difficulty and expense attending land-transport in Chile, some idea may be formed from the fact that the freightage of one ton of goods from New York to Valparaiso, 10,000 miles by sea, is but £1 1*s.*, whereas the conveyance of the same quantity from Santiago to Valparaiso, only 100 miles, costs £7 7*s.*!!

Although evening surprised us ere we returned to Santiago from Maipú, and a dense mist hung over the landscape quite precluding all views for the greatest part of the road, we were so fortunate, shortly before our arrival at the city, as to be favoured with a glimpse of the majestic range of the Cordillera, lit up by the declining rays of the sun, a spectacle resembling the sun-set splendours of the Alps in Switzerland; but the novelty of the details of which, coupled with its suddenness and brevity of duration, greatly deepened the impression of awe and admiration with which we regarded it.

At noon of the 30th of April we set out on our return to Valparaiso. On this occasion we availed ourselves of a dif-

c. From Port Caldera to Copiapó, the mining capital (50 miles), both constructed by private companies. From Copiapó a tramway leads to Pabellar, whence there is a mule-road to the mines of Chanarullo (4400 feet above sea-level). Mr. Evans had invented a new description of locomotive, capable of climbing even to this elevated region. Lastly, a road is projected to unite Copiapó with the mining district of Tres Puntos.

ferent kind of vehicle, an American mail-coach as it is termed, from its having been first organized by a North American, which admitted of our seeing a different range of country. In this journey we were fortunate enough to be accompanied by Mr. James Volckmann, a young German gentleman, who is an active colleague of the renowned geologist, Mr. Pissis, and has already himself contributed many valuable additions to our acquaintance with the geology of Chile. The coach stopping at Melepilla, the next station, a neat little town nestling on a level surface at the foot of a lovely valley, whence it was to proceed the following morning to the port, we took advantage of the opportunity to pay an *impromptu* visit to a Chilean family in the neighbourhood, to which we had introduction. We rode out accordingly to the *hacienda* of Las Esmeraldas, about two miles distant from Melepilla, where we were received like old friends of the hospitable family Lecaros. Most of the wealthy landowners of the country pass only a few months of each year in their splendid houses at Valparaiso or Santiago, and spend the rest of their time in affluent retirement upon their properties. The small, externally unsightly, mansion was furnished within with all that could minister to that genuine English notion of COMFORT; and the ladies, though the hour was so late that they could scarcely have expected any further visitors, received us in full Parisian toilette. This surprised us the more, inasmuch as the national costume is very much more graceful than that of Europe,—even an elderly female, dressed

in sombre-hued silk, and with a long black coif around the head, the left ribbon of which is turned over the right shoulder, having quite a unique, piquant, and attractive appearance.

Even here the conversation took a political tone, and it speedily came to light that the stay of the ladies at Las Esmeraldas at the present inclement season was attributable less to any admiration of the beauties of nature than to some political disagreement; for the Chilean ladies, like all their sex of the Latin stock, delight in political demonstrations. However, they are mainly taken up with keeping the Ultramontane element, the influence of which is everywhere apparent, within the limits assigned it by the Constitution itself. The head of the family, Don José Antonio Lecaro, an excellent energetic old gentleman, told us a great deal about his property, of the improvements he had made and was still projecting, and we regretted that the advanced hour prevented our examining this well-managed *hacienda*, which is so large that the pasturage can maintain several thousand horned cattle and horses. Nevertheless, so far as regards numbers of farm-animals, it is probable that the proprietor of Las Esmeraldas is very far from being among the most extensive landholders of Chile.

In the evening we adjourned to the elegant drawing-room, where time flew away in the most delightful manner with music and singing; the music, chiefly German, being selected, if we were not mistaken, quite as much through genuine appreciation of the great *maestros* whose works were chosen, as to do honour to the nationality of the guests.

During the night we returned on horseback to Melepilla, and the following morning, 1st May, 1859, continued our journey to Valparaiso, where we arrived about four P. M., full of the most delightful and varied memories of our trip.

When we reached Valparaiso the frigate was ready to sail, but her departure was delayed, as our Commodore resolved to await the arrival of the next European mail, in case he should receive further instructions as to his route. In every social circle at this place, men hoped against hope that a European Congress would be convoked, which should devise a peaceful solution of existing differences. If, however, there was to be war, then amongst all, especially the Germans resident here, it was a foregone conclusion that Germany ought to make common cause with Austria. The disappointment was not long waited for—* * * * !

The uncertainty of our stay did not admit of any more excursions being made to a distance, and the naturalists accordingly redoubled their activity in searching for subjects in the environs of the town. The Directors of the railroad from Valparaiso to Santiago, which, however, is as yet only completed as far as the little village of Guillota, were so kind as to invite the members of the Expedition to make free use of their line, and the chief engineer, Mr. Lloyd, had also issued instructions to the various station-masters to give all manner of facilities to the foreign guests, and assist them in their collections to the utmost of their power. Unfortunately we found no time to avail ourselves of this very friendly in-

vitation, and thus had to forego an excellent opportunity for examining the line itself, and studying its interesting geological features.

We succeeded once in getting as far as Guillota, the Spa of Chile. This portion of the road, 30 miles in length, is much travelled over, the fares being 1, 2, and 3 dollars according to class, and the monthly receipts amount to from 20,000 to 25,000 dollars (£4200 to £5250).

The little village of Guillota, lying in a valley laid out in orchards and vineyards, is of enormous extent; the *Calle larga*, or Long Street, being six English miles in length. The houses are usually one storey, very plain and unpretending but scrupulously clean. The stranger who wanders though Guillota, and becomes sensible of the filth and dust in the streets, and the entire absence of comfort within-doors, is apt to puzzle himself how the place came to be selected for a summer resort of the fashionable world, as indeed he may marvel how the Spanish navigators, to whom Valparaiso is indebted for its name, contrived to associate the idea of the Vale of Paradise with its sandy hills and glades bare of vegetation. Possibly the summer guests, who flock hither from October to March, may be sufficiently enthusiastic in their admiration of natural scenery, to feel themselves indemnified for discomfort within-doors by the charm of the surrounding landscape. The environs are exceedingly beautiful, the valley abounds in luxuriant vegetation and beautiful distant prospects, and from the little hill of Mañaca, 150 to 200 feet in height, on the

summit of which a large wooden cross was set up by missionary preachers in 1849, there is stretched at the feet of the beholder a magnificent picture of unrivalled interest and beauty, especially when the sun is near his setting, and lights up the magnificent peaks, from 3000 to 4000 feet in height, called, from their form resembling that of a bell, Campaña and Campañita. More probably, however, the visitors from the port are at that hour busily employed at the "green tables," where, at faro and roulette, enormous sums are frequently lost and won.

One marked peculiarity, which it is impossible to avoid noticing, is the vast disproportion here between the sexes. One hardly ever sees any but ladies in the streets, or sitting elegantly attired on low stools in front of the open door, their hands busy with their work, their eyes watching the passers-by. The numerous hard-working male population is much more profitably employed in working at the city, rather than staying at home engaged in agriculture; whence it results that at Guillota, just as in some European fishing villages along our sea-coasts, the male portion of the household are often absent for weeks together, and the little hamlet has the appearance of being the head-quarters of a tribe of Amazons.

From Guillota we went on to a large hacienda, about nine miles further, called La Calera, the property of a native of Bolivia. Part of this is planted with almond trees, but by far the larger portion is devoted to wine-growing. One of the

Mandadores, or overseers, begged us to enter a large, handsome building where the process of wine-preparing was being carried on, and gave us some new wine, here called *Chicha* (pronounced Tchitcha), which tasted very sweet and palatable. The Chicha is used in enormous quantities in Chile, and is even sent abroad in large bottle-shaped skins, but, owing to this mode of keeping it, the wine, which is set down much as cider is in Normandy, acquires a villanous twang that is anything but agreeable.

In Valparaiso we were so fortunate as to fall in with Mr. Kindermann, one of the founders of the German settlement of Valdivia, who has been long resident there, and has large landed property in that direction. We also made the acquaintance of Dr. Philippi, who, although attending to his duties as Professor of Natural History in the University of Santiago, finds time to take an active part in the colony of Valdivia. It would appear from the inquiries instituted by competent persons, that the main obstacle to the permanent success and extension of the German colony consists in the want of roads, and that the fertility of the soil justifies the most sanguine hopes, so soon as more ready means of communication are provided, that the numerous products raised by this industrious community will no longer want either a steady market or extensive buyers.

Another German colony, which was organized with extensive privileges established at Punta Arenas in Magelhaen's Straits, and now numbers some 150 colonists, not only

displays the most cheering signs of vitality, and that in a climate which has acquired, most unjustly however, an unenviable reputation, but promises to be of great importance both to Chile itself and to the vessels of all nations navigating the Straits of Magelhaen.* This will be more particularly the case, so soon as the scheme projected by certain Chilean patriots is realized, of which there is an early prospect, of placing a number of steamers upon the Magelhaen-Straits' line, for the purpose of towing vessels through.

In order to form an adequate conception of the importance of this undertaking, both for Chile and all sea-faring nations, it must be borne in mind, that by thus making the Straits available, vessels will not alone escape the storms of Cape Horn, but will effect a great saving in time. Maury estimates the time required by a vessel to pass from the eastern entrance of the Straits around Cape Horn to the western entrance at 25 days. They could be towed through in from four to five days, thus saving some 20 days. The tonnage passing round Cape Horn to Valparaiso alone cannot be much short of 120,000 tons of merchandise, valued at about 16,000,000 dollars (£3,200,000), so that the pecuniary returns realized by the saving of time in the voyages of these vessels promises to realize to the company a net profit of 257,776 dollars (£53,600).†

* See a very interesting "Essay" upon Chile, published at Hamburg by Señor Vicente Perez-Rosales, Consul-General for Chile at that port.

† This estimate is founded on the following calculations :—

120,000 tons at $40 per ton, comes to $4,800,000, the annual expenses of which,

Of course the estimate will become very much larger, if all the sailing vessels be included which pass annually round the Horn from E. to W., amounting to some 500 in number, with a tonnage of 400,000, and cargoes valued at 53,000,000 dollars (£11,000,000). The projectors also propose to erect a lighthouse and telegraph station, both at Cape Virgin on the East, and Cape Pilar at the Western entrance, as also in Possession Bay, 40 miles W. of Virgin's Cape, at the Eastern entrance, and to have the depôt buildings for the requisite materials at the entrance of Smythe Channel, 35 miles east of Cape Pilar. Four or five steamers of at least 500 tons are to perform the towing service, for which they propose to charge sailing vessels 1.50 dollars (6*s.* 3*d.*) per ton, less, in fact, than the charge for towing in China, Australia, &c.

The carrying out of this scheme, which must exercise an incalculable influence on the commerce of the Pacific slope of the Indies, is mainly dependent on the disposition of the Chilean Government to guarantee a given interest, and accord certain facilities to the company which is to undertake so important and heavy an enterprise. Its requirements are by no means extravagant. During a period of fifteen years, it asks for an annual subvention of 125,000 dollars,

such as crew, insurance, &c., and including interest for money invested, amounts to 30 per cent. for 20 days $80,000
Further saving of interest and insurance on goods valued at $16,000,000 at 20 per cent. for 20 days 177,776
Total saving effected by vessels using the Straits of Magelhaen $257,776

for the first five years,* during the next five years of 100,000 dollars, and in the last five years 75,000 dollars, after which all aid from the State is to be withdrawn. Further, the company seeks to be secured in the exclusive right during those fifteen years of working the coal fields,† which are known to exist in the Straits, to be presented free of expense with the land required for the various buildings and stations, and, lastly, permission to fell wood all along Magelhaen's Straits, and in the divergent bays, gulfs, and channels, but on the condition that one half of the soil so reclaimed shall remain the property of the State, the other half to remain in perpetuity the property of the adventurers. From the day on which this project is ushered into existence by the munificence and under the auspices of the Chilean Government, a new era will commence for the shipping interest along the west coast of South America! The difficulty is in securing a monopoly of the Straits. At present any captain may run the Straits if he will, and this is occasionally done. An English man-of-war passed through in the spring of 1862.

At last, on 8th May, the European mail came in, but failed to bring the letters we expected, giving us instead only news

* The Steam-packet Company which now carries the mails twice a month from Valparaiso to the southern ports of Chile, receives an annual subsidy from Government of $50,000 (£10,500).

† According to the reports of Mr. George Schuthe, governor of the little colony in the Straits of Magelhaen, some very valuable coal-strata exist near Punta Arenas. These, although difficult of access, would, nevertheless, fetch a high price, considering the high price of coal in the harbours along the east coast of South America. In Buenos Ayres and Monte Video, 12 to 15 days' sail distant, the average price of coal is 12 dollars (£2 10*s.*) per ton.

of several months back, our bag having been sent to Lima instead of Valparaiso. However, the news received direct from Europe left no doubt that a war was imminent between France and Austria, and this circumstance at once determined our commander, like a true patriot, to return immediately home, so as to make his own services as well as those of his subordinates available in protecting our native land from the dangers impending over it. The original plan of sailing to Lima, and thence, after visiting the Galipagos, to Buenos Ayres and Monte Video, was under the prevailing circumstances totally abandoned. In a few days more the vessel was to sail for Gibraltar direct round Cape Horn.

As this decision involved a sea-voyage of some 10,000 miles, which must naturally be almost barren of ethnographic or statistical interest, and as the arrival of the *Novara* at Gibraltar could scarcely be expected under from 80 to 90 days, the author of this narrative requested permission of the commander of the Expedition to devote the time required for the frigate to make her voyage, in prosecuting a journey overland to Lima and Panama, with the intention of catching at Aspinwall the next British royal mail steamer to Europe, and thus again fall in with the *Novara* at Gibraltar about the beginning of August. The paramount motive for this proposal was the wish expressed to dedicate all this time to visit Lima, Panama, and the intermediate ports, and thus to forward to the utmost the objects of the Imperial Expedition, even when it was in fact

homeward bound. It was also his intention to institute certain inquiries while residing in the capital of Peru, respecting the actual condition of those Tyrolese families, who, misled by alluring prospects of all sorts, had resolved on emigrating to Peru in 1851, and had since then sunk into a most wretched state, according to indirect accounts received of their unhappy case. Commodore Wüllerstorff, always ready to assist, whenever it is in his power, in promoting and advancing scientific aims, at once acceded to this request, conceiving that it was a deviation quite within the scope of his instructions for the Expedition, and compatible with the objects aimed at by its illustrious projector.

Before the departure of the *Novara*, the Austrian Consul-General gave a splendid entertainment. This had been repeatedly postponed, as, under existing circumstances, it was not certain whether Chilean society could well be present. The intelligence, however, which a few days previous had been received from the Northern provinces as to the attitude of Government, the suppression of the insurrection, and the flight of the leaders, had produced a vehement reaction in the public mind, and, at least among governmental circles, had given hope of a happy solution.

Accordingly the ball came off, and very gay it was. The spacious and elegant residence of M. Flemmich (the head of the distinguished English firm of Huth, Grüning, & Co.) was richly adorned with flowers in every apartment, and the whole brilliantly lit up, while a bevy of graceful ladies swept

through the salons, whose natural charms were enhanced by their agreeable geniality, not less than by an elegance of toilette such as Parisian salons themselves could not have surpassed.

A few days before the *Novara* sailed, a merchantman dropped anchor in the roads, which on her voyage from Melbourne to Europe had, while running 11 miles an hour, come into collision with an iceberg in 60° S. and 149° E., by which she had lost bowsprit, foremast, and all her topmasts, besides carrying away her cutwater and figurehead, and damaging the hull, and, sad to relate, sacrificing the lives of sixteen persons! The spectacle presented by this mere ruin of a ship, as she ran in half dismasted under jury-rig, created profound emotion even among the sea-faring portion of the community, which was still further deepened, when the full particulars of their sufferings were detailed by the passengers. The captain, fully expecting that a ship so seriously damaged must go to the bottom, formed the unworthy resolution of escaping in a boat with fifteen of the men. The whole perished, it is supposed, as nothing was ever heard of them, while the vessel, which owed her truly marvellous preservation to the fact that, having struck stem on, she had sprung no leak, though so terribly injured, was enabled to pursue her voyage to Valparaiso, where she arrived, the wind proving favourable, after a passage of 55 days.

On the 11th May all was ready for the departure of the *Novara*, and the officer on duty only waited a favourable

breeze to weigh anchor and set sail. Unfortunately, however, none such sprung up, and when towards 7 A.M. a gentle breeze at last rippled the water, it did not last long enough to enable the vessel to clear the roads. The captain of H. M. S. *Ganges* (80), who, as also Admiral Baines, the venerable Commander-in-chief of the British naval forces on the Pacific station, had already in a variety of ways cordially coöperated with and aided the Austrian Expedition, sent some of his boats to tow the frigate out of the roads, in which the French corvette *Constantine*, which had arrived the day before, politely assisted. Thus towed along by no less than 14 boats, the *Novara* succeeded in getting into the open ocean. Favoured with a gentle breeze from the northward, she was soon able to lie her course, and towards evening, when a rather fresh S.W. sprang up, she was rapidly leaving the hospitable shores of Chile.

The Commodore thought it advisable to make an offing of from 100 to 200 miles parallel with the coast, and to keep increasing his distance even against contrary winds, so as to permit of his rounding Terra del Fuego, running free before the S.W. winds, prevalent at that season off the Horn.

The weather was from time to time heavy and unfavourable, besides being cold and rainy, but on the whole it was a very fair passage for the winter season. But few observations could be got, though there were enough to admit of keeping the ship on her course. Only once did it happen that no observations could be got for several days, till, during the

night of 23rd May the sky suddenly cleared. No sooner, however, had the officer of the watch selected a star by which to calculate his position, than he found himself involved in no small perplexity. The Southern Cross and Centaur were close to the zenith, and when the seamen directed their wondering gaze to the magnificent aspect presented by the southern stellar hemisphere, they could with difficulty recognize the old familiar European constellations as they now shone forth along the northern horizon, with sadly diminished brilliancy.

The further south the *Novara* ran, the more melancholy grew the aspect both of the sun and the moon. Fog, clouds, and rain obscured a great proportion of the feeble light left, and although the clearness of the night occasionally made some compensation, yet to sailors long accustomed to the warm, smiling tropical skies, they seemed doubly cold and gloomy.

The frigate rolled heavily, her oscillations increasing the general discomfort, although the fetch of ocean was less than off the Cape of Good Hope. Impelled by favourable winds, the good ship rapidly neared the southernmost point of her voyage, and every one on board watched with ever increasing interest the alterations in the natural phenomena of these inhospitable latitudes.

Several days were lost in calms and easterly winds, and partly to catch the southerly breezes which might drive her N.E. into the zone of constant winds, partly for the purpose

of scientific investigation, the vessel was carried as far south as the parallel of 60°.

On 28th May, the thermometer was observed to indicate a strongly-marked and speedy decline in the temperature of the water, whence it was conjectured that polar winds would be found following the course of the cold current, or else that icebergs were near. The ship's head was now laid for Terra del Fuego, the wind blowing very gently from the N.E., but a S. wind springing up later, she began to work merrily along. Of several ships which for some days had been in sight, steering the same course as the frigate, none had ventured so far south; they now were all left behind, having lost way by over-caution. Among these was the French corvette *Eurydice*, which left Valparaiso Roads two days before the *Novara*, and was overhauled on the 29th May.

With the polar wind snow fell during the night; and when day broke, about 9 A.M., the singular spectacle was presented of a ship all in white,—white masts, white yards, white cannon. This appearance was repeated the two following days only, but the weather remained for a much longer period cold and disagreeable. The lowest reading, however, of the thermometer only indicated 3° Celsius below freezing (26°.6 Fahr.).

On 29th May, about noon, the *Novara* crossed the meridian of Cape Horn, and was once more in the Atlantic Ocean. Notwithstanding the uncertain conditions of wind and wea-

ther, a variety of interesting observations were made during the passage of the ship round Cape Horn, and numbers of valuable results obtained for the benefit of navigators in those high latitudes. Thus, for example, the fallacy was established of the assertion of certain navigators that "the fluctuations of the barometer off Cape Horn did not depend on the state of wind and weather." In like manner by ascertaining the mean of a variety of collated data, it was found that the temperature of the surface of the ocean demands the most careful attention, inasmuch as the alterations in it from hour to hour may be relied on to indicate corresponding changes in the wind and weather.

The low reading of the barometer off the Horn seems to be a sort of compensation for the great pressure of the air in what are known to seamen as "the Horse latitudes," and, in point of fact, the barometrical readings at 56° S. betray a drooping tendency, which corresponds with the movements of the sun, as the latter also does with that of the zone of greatest atmospheric pressure. Hence it is obvious that from this parallel the atmospheric pressure will increase as we advance to the Pole, and this law is further confirmed by the prevailing winds further south. Hence, while we find north-west or strong west winds blowing off Cape Horn, at the South Shetland Islands, still further south, the prevailing winds are N.E. or E., thus producing contrary atmospheric currents, almost resembling chronic whirlwinds, and consequently that both north and south of the central zone, the

barometer will be found to indicate a greater atmospheric pressure.

For this reason vessels intending to round the Horn from E. to W. usually keep further to the south than those sailing in the opposite direction. On the other hand, during the winter season of the southern hemisphere, the east wind must blow more frequently at the Cape itself, in consequence of the influence exercised by the zone of least atmospheric pressure, and the weather be less likely to prove stormy. And such is found in fact to be the case.

Hitherto, with the exception of Cape Horn, so few observations have been made in high southern latitudes, that it is impossible to arrive at any definite conclusion, important as the subject is to science as well as in the interests of commerce, and which must exercise so much influence upon the whole system of atmospheric changes over the entire surface of the earth. To attain this object, an expedition consisting of but one ship cannot suffice. It would be necessary to employ several, each provided with instruments carefully compared, and which should sail simultaneously to the southern waters at definite distances from each other, and at given times make precisely similar observations and devote their entire attention to investigating the laws which regulate this puzzle to the scientific student.

Under more favourable political auspices, a joint expedition by the various naval powers would be the best means of solving the problem, and a fleet of some ten or twelve ships

commencing upon a definite plan, might obtain results such as might hand down the scientific renown of our age and century to all future generations.

While sailing in these southern latitudes, the Commodore hit upon the idea of ascertaining the increase of gravity as the poles were approached, by the comparison of simultaneous observations taken with the mercurial and Aneroid barometers. Both instruments, in fact, gave a regular rule for calculating the weight of the atmosphere at the points of observation, with this single difference, that the ordinary barometer gives the weight by the pressure of the air upon a column of mercury, representing the weight of a similar column of air; while in the Aneroid barometer, the weight of the atmosphere is measured by an exhausted receiver, which, in resisting this pressure, indicates the amount by the tension of a spring.

The indications of the Aneroid are moreover independent of the influence of universal gravity and the disturbing conditions it introduces into the instrument, to which the column of mercury is of course subject. Assuming, for example, that the ordinary barometer and the Aneroid gave the same readings, the similarity will no longer exist at a given distance from the Equator—the Aneroid, owing to the elimination of the disturbing element of gravity, indicating an increased pressure of the column of air, whereas the ordinary barometer will continue to indicate the same pressure as at the Equator. The difference between the two readings will, however, be

directly proportionate to the amount of gravity thus got rid of, and is consequently susceptible of calculation. Although the data collected during the voyage for widely different purposes, and those now collected by means of the Aneroid, do not realize the anticipations that had been formed, to the length of utmost precision, the result has shown that much may be achieved in this direction by observations easily made in the course of a voyage even by ordinary navigators, such as would greatly benefit science; and captains of all grades, who in the course of their voyages have occasion to traverse these special latitudes, and are able to use good, reliable, thoroughly-tested instruments, might by a series of such observations add materially to our acquaintance with physical phenomena.*

The *Novara* sailed into the Atlantic with fair strong winds, and on 1st June was about the latitude of the Falklands,†

* We cannot help stating here that we think it far from unimportant, that when employed to measure the altitude of prominent objects, the Aneroid may be made to supply widely different results from those of the ordinary barometer, as the elimination of gravity in the Aneroid readings remains as a constant element, and hence the difference between the two can only be rectified by due regard being had to this circumstance, when performing the requisite calculations.

† This group, between 51° and 53° S., and 57° and 62° W., comprises, besides the two larger islands, 90 smaller islands, the superficial area of the whole being about 6000 square miles, or 3,840,000 acres. The summer temperature is 69°.8 Fahr. and that of winter rarely falls below 30°.2 Fahr., so that the climate greatly resembles that of Scotland in many respects. The islands present a cheerless aspect; a rolling country with peat soil, covered with rank grasses, and intersected by low ranges of hills, alternating with marshy rivers and torrents. The lower part of the country is clay, slate, and sandstone, covered with turf, which is used for fuel. Tussock grass (*Dactylis cespitosa*) is the most common plant.

that interesting group of islands, which have belonged to England since 1842. The few colonists at present resident there, not exceeding some hundreds in all, are maintained here at the expense of the British Government, and trade in skins and salt provisions. However, the annual cost of keeping up the colony does not amount to above £5000. Should the project of cutting a canal across the Isthmus of Central America, which has been the dream of centuries, ever be realized, the Falklands will become one of the most solitary spots on the face of the globe, owing to the entire abandonment of the route round Cape Horn, and as such would become admirably adapted for a penal colony. Judging, however, from the information respecting the southern parts of South America furnished by Admiral Fitzroy, so well known in connection with meteorological science, the eastern side of Terra del Fuego presents much greater advantages for such a project, and we cannot but feel surprised that England has not already founded an establishment there, where so many advantages are obvious at a glance, especially those relating to navigation.

From the Falkland latitude, the *Novara* steered nearly a great circle course, or, in other words, followed the shortest line of distance, to the point where she must pass through the "Horse latitudes," about 25° W. of Greenwich, and with favourable west winds, sometimes rather stormy, sped along at from 200 to 250 knots per diem on her homeward voyage. On 5th June, about 9 P.M., a sudden squall from W.N.W.

struck the ship about the latitude of the most northerly part of Patagonia, so violent that had not the sails been taken in with all despatch, the very masts must have been blown out of the vessel, or at all events have sustained serious injury. Notwithstanding her being short of upper sails, the frigate heeled over more at this time than at any other period throughout the voyage.

On 7th and 8th June, the *Novara* encountered a severe tornado, about the latitude of the mouth of the La Plata. A violent wind, which blew from the N.N.E., on the 7th, hauled round by N. and N.N.W. to W.S.W., and reached its greatest power on the 8th, about 9 A.M., the wind being N.W. At this moment the motion of the ship was so great, and she laboured so heavily in the high short waves, that the boats on her lee quarter were in imminent danger of being swept overboard. By observations made it was found that she heeled over 38° to starboard and 12° to port, so that the entire amount of oscillation was 50°.

Unfortunately one of the barometers got broke on this occasion; the officer, while observing it, being precipitated against it by a sudden roll of the ship. It was the most trustworthy instrument on board, and, albeit near the end of the voyage, it was not the less vexatious to have the series of admirable observations made with this instrument suddenly interrupted.

The 11th June possessed an interest of its own for those on board the *Novara*, as on that day she crossed the course

which she had followed two years before, in sailing from Rio to the Cape of Good Hope. Thus the actual circumnavigation had been successfully completed, and at least the material portion of the undertaking happily achieved.

Meanwhile the wind, though still always favourable, had abated greatly from its first strength, and each day saw the barometer steadily rising. Even the sea-birds, those constant attendants of vessels, so long as they are in the extra-tropical latitudes of the Southern Ocean, now gradually began to cease flitting around the ship, as she approached the hot zones.

On 15th June, in 25° 40′ S., by 25° 9′ W., the ship reached the S. E. trades. The weather was divine; the deep blue sky above, the exquisite tints of the atmosphere and the ocean, and the calm beauty of the long full-moon nights, exercised a most marked and beneficial influence upon the spirits and bodily health of the crew. Huge whales disported about, "blowing," as it is termed, immense masses of water into the air, like so many springs leaping from the bosom of the deep, or rushing upwards till half of their immense bodies emerged vertically from the water, into which they slowly plunged once more with a tremendous splash, the whole surface of the sea boiling and undulating as they fell back, athwart which might be seen dolphins gambolling about, or cleaving the blue depths with unmatched velocity. The S. E. trade blew with unbroken regularity, usually in its normal direction, but occasionally hauling up a little towards N. E., till, as we

approached the Equator, it gradually blew steadily from the S.E.

On 23rd June the Equator was reached and crossed for the sixth and last time in 26°13′ W. In 25 days the frigate had run in a direct line 3800 nautical miles, or an average of $6\frac{1}{3}$ knots an hour.

The very strongly-marked westerly current which prevails near the Equator materially lengthened the voyage, its strength in 2° 39′ N. and 26° 14′ W. being such that while the ship made 213 knots in the 24 hours upon her direct course, she was carried within the same period no fewer than 65 miles in a direction of W. by N.

The S. E. trade remained as such as far as 4° 36′ N., 25° 38′ W., when fresh N. E. breezes were encountered, and stayed by the ship till she reached 9° 54′ N. by 29° 42′ W. She now had to make her way slowly forward through a belt of calms, rain-squalls, and occasional puffs of wind from W. and S. W., till, at length, on 2nd July, the wind came on to blow from N. N. E., in 11° 47′ N., by 29° 29′ W.

The French corvette *Eurydice*, which had laid her course for St. Helena, had on that account kept more to the eastward, and had crossed the line in about 22° W., and had in consequence lost so much more way than the *Novara* that she took three days longer than our frigate to get from St. Helena to lat. 20° N., to which this other circumstance contributed, that the N. E. trade does not blow so strongly or so

steadily in the vicinity of the Cape de Verd Islands as a little further out.

On 7th July, in 22° 58′ N., 36° 51′ W., the *Novara* reached the well-known Mar de Sargasso, a portion of the Atlantic Ocean, in which the current, setting from the coast of Africa, encounters a branch of the great gulf stream, and forms a basin of still water, in which is collected an immense mass of seaweed (*sargassum bacciferum*, etc.) which is propelled slowly forward in long ranks by the action of the wind.

The 9th July was a day of mourning on board. One of the sailors, who for a year past had been ailing and almost constantly in sick bay, died, and was committed to the deep, the last victim during the voyage.

Next day, in 37° 37′ N., 39° 1′ W., the N. E. trade began to draw to the eastward, and gradually became more favourable, but at the same time lost in strength, till on the 14th it failed entirely.

Several ships now hove in sight, and as one of these by her course must obviously approach the frigate pretty close, it seemed a good opportunity to get news from Europe, which the voyagers had for 54 days been speculating upon with anxious hearts. Accordingly a boat was lowered from the frigate and sent to board the merchantman, which proved to be the brig *Hero*, Captain Williams. He had left Barcelona 50 days before, and was bound for New York. The captain accordingly was not in a position to satisfy the very natural curiosity of those on board the *Novara* as to the

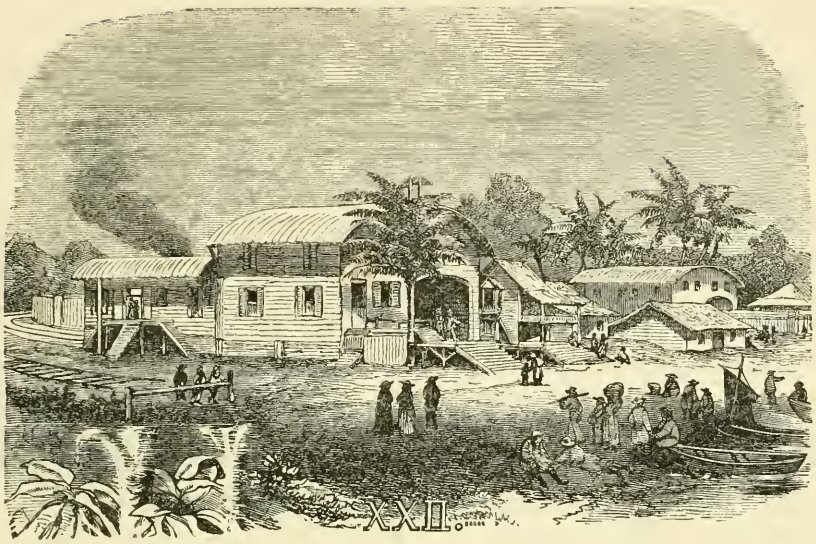
turn affairs had taken in Europe, or to give them late intelligence of public events especially in Austria. A few half-torn newspaper leaves round some bottles of cognac was all that the most earnest wish to oblige could furbish up in the way of information. In the course of conversation with the captain, it was only casually elicited that war had broken out two months before. More than this the honest seaman did not know, feeling, in fact, much greater interest in securing a profitable freight for his ship than in the political state of Europe.

As soon as the frigate's boat had returned, the officer in charge was met with a storm of questions and inquiries. His reply was very unsatisfactory, and little consolatory. Among the fragments of papers there was little that was important, still less that could give satisfaction, and, as usually happens under such circumstances, precisely at the spot where some news of our own country had been printed, the leaf was torn across, and the rest missing. Thus the anticipations formed of obtaining intelligence from the merchantman which should allay the anxiety on board had not merely failed to do so, but had in fact increased it in intensity, and the excitement caused by this episode on the minds of all on board reached almost fever heat. One would far sooner have encountered a tempest than such uncertainty, especially if it could have driven the frigate more rapidly towards her goal!

On the 19th July, at midnight, with favourable west winds

and a lovely moon, the *Novara* passed between Flores and Corvo, through the narrow channel of the Azores Islands—the first land that had been sighted since the frigate left the west coast of South America, 71 days before! The fact that it was hit so accurately, also furnished satisfactory proof, in a scientific point of view, that the seven chronometers in use on board, despite 27 months of constant handling under the most varying and frequently unfavourable conditions, were still in perfect order, and indicated with admirable accuracy the longitude of the ship.

Unfortunately—a circumstance to be expected in such latitudes in the height of summer—the ship now lost entirely the favouring gales which hitherto had filled her sails, and sped her rapidly on her course. When not above a few hundred miles distant from Gibraltar, those on board had to toss about for a number of days in calms that seemed as though they would never cease. Anxiety was at its height.



An Overland Journey from Valparaiso to Gibraltar, viâ the Isthmus of Panama.

16th May to 1st August, 1859.

Departure from Valparaiso—Coquimbo—Caldera—Cobija—Iquique—Manufacture of saltpetre—Arica—Port d'Islay—*Medanos*, or wandering sand-hills—Chola—Pisco—The Chincha or Guano Islands—Remarks respecting the Guano or Huanu beds—Callao—Lima—Carrion crows, the principal street-scavengers—Churches and Monasteries—Hospitals—Charitable institutions—Medical College—National Library—Padre Vigil—National Museum—The Central Normal School—Great lack of intellectual energy—Ruins of Cajamarquilla—Chorillos—Temple to the Sun at Pachacamac—River Rimac—Amancaes—The new prison—Bull-fights—State of society in Peru—The *Coca* plant, and the latest scientific examination respecting its peculiar properties—The *China*, or Peruvian-bark tree—Departure from Lima—Lambajeque—Indian village of Iting—Païta—Island of La Plata—Taboga Island—Impression made by the intelligence of Humboldt's death—Panama—"Opposition" Line—Immense traffic—The Railway across the Isthmus—Aspinwall—Carthagena—St. Thomas—Voyage to Europe on board the R. M. S. *Magdalena*—Falmouth—Southampton—London—Rejoin the *Novara* at sea—Arrival at Gibraltar.

Five days after the departure of the *Novara*, I left the roads of Valparaiso on board the mail steamer *Callao*. The weather

was exceedingly unfavourable, the rain falling in torrents, while a heavy tumbling sea made the embarkation of the numerous passengers and their effects a process anything but agreeable. I have, therefore, the greater pleasure in expressing my gratitude for the courtesy of the Captain of H. M. S. *Ganges*, who sent his own gig to take me off to the steamer, and to the numerous friends, who despite the stormy weather had assembled on board to bid me a last farewell, and provide me with letters of introduction to the authorities and most influential persons of the more important of the localities I was about to visit. At 2 P. M. the shore bell sounded, the little boat made its appearance on the port side, pitching heavily in the swell, and a long thin figure stepped on deck. This proved to be Captain Stewart of the *Louisa*, whose acquaintance I had formed at the island of Tahiti, and who now, half breathless, handed me a small packet with the following endorsement,—"These are the extracts you requested from my journal, and which I promised to prepare for you on my first voyage from Norfolk Island to Pitcairn." They consisted in fact of those remarks upon the latest phase of the strange destiny of the Pitcairn Islanders, which have already appeared in a previous chapter. The worthy Captain had kept his word with true John Bull punctuality. A few moments more and the *Callao* was steaming out of Valparaiso Roads, on her voyage northwards.

Although the boats of the Pacific Steam Navigation Company plying between Valparaiso, Callao de Lima, and Pa

nama, are tolerably large, clean, and elegantly fitted, yet the number of passengers for intermediate ports make them anything but a comfortable mode of travel. For, notwithstanding the high fares,* it is necessary to crowd three or four passengers into each state-room, which in the heat of the tropics is most inconvenient, and at times almost intolerable. Personally, however, I had no reason to complain on this score, as all the captains of the various steamers in which I journeyed north, so soon as my connection with the *Novara* Expedition was known, at once, with the most marked courtesy and attention, secured to me a state-room for my own exclusive use, and whenever we reached a port, placed their own boats at my disposal during our stay.

The morning after we left Valparaiso, we reached Coquimbo, where, a few weeks before (24th April, 1859), a severe action had been fought between the Chilean troops and those of Pedro Gallo, the former proving victorious. Coquimbo is a small town of about 2000 souls, whose sole claim to importance is its proximity to some rich copper-mines. M. Longomasino, one of the many victims of the

* The fares, first class (including provisions and bedding, but without wine), are as follows:

	Miles	Dols.	£ s. d.
Valparaiso to Callao de Lima	1467 ...	95 or	19 19 0
Callao to Panama	1594 ...	110 ,,	23 2 0
Aspinwall (E. coast of Isthmus of Panama) to St. Thomas, and thence to Southampton	4572 ...	360 ,,	75 12 0
Total, exclusive of 49 miles of rail from Colon to Panama	7633 ...	565 ,,	118 13 0

coup d'état of the second December, who, the reader will recollect, received permission to make the voyage from Tahiti to Valparaiso on board the *Novara*, was among our passengers; he left the steamer at Coquimbo, intending to go to the adjoining mining town of Serena (20,000 souls), where, through the kindness of friends, he had been invited to edit a political paper.

Here I went on board the British corvette *Amethyst*, which just a year before had been lying alongside of the *Novara* in Singapore harbour, and was received by her excellent commander with a most cordial welcome. To my astonishment I found a number of civilians on board: refugees, who had taken an active part in the late insurrection, and who now, when all hope of success was over, sought an asylum on British soil, for such is the deck of an English man-of-war, and, thanks to British political proclivities, had been cordially received there.

About 11 P.M. the same night we were off the insignificant little harbour of Huasco, and about nine next morning ran into Caldera, a dreary-looking little place of some 2000 inhabitants, built upon one of a succession of sand-slopes. There is not a trace of vegetation; no foliage, no shrubs, no patches of grass,—all around as far as the eye could reach was a cheerless waste of sand. Only extraordinary opportunities for money-making could have induced the inhabitants to settle in this desolate wilderness, deficient in the very first necessity of life—fresh water. Every drop of this most

important beverage has at present to be brought from 90 miles inland, so that a cask containing some 15 gallons costs 31 cents or 1*s.* 4*d.* English. The charge for supplying water alone to 90 or 100 workmen amounts to 40 dollars, or £8 8*s.*, a week! At the time I visited it, the people were negotiating for the erection of a steam distilling apparatus, for procuring fresh water from the sea, at a less cost than was paid previously. From Caldera, a locomotive line of rail leads to the mining town of Copiapó, 71 miles inland, in the vicinity of which are rich mines of silver and copper. This enterprise has proved so remunerative, that, although its construction cost 2,500,000 dollars (£525,000 or about £7400 a mile), the share-holders receive an annual dividend of 16 per cent.

I visited the copper-smelting kilns, which belong to an English company, and produce annually from 1800 to 2000 tons of almost virgin copper (90 to 96 per cent.), in ingots and pigs, as they are termed, an ingot weighing from 16 to 18 lbs avoirdupois. The ore, as at first found in the mines of Copiapó, has barely 18 to 36 per cent. of copper, and has to undergo six or seven smeltings before it becomes sufficiently pure to be sold at a profit in the markets of Europe. The smelting-furnace produces about seven tons of copper per diem, at a consumption of 60 tons of coal,* which is imported from

* Hitherto, the coal procured at Lota in the south of Chile has been neglected, in consequence of the freight being so heavy that it is cheaper to import coals from England and North America.

Swansea, partly from Pennsylvania, and is worth 12 to 15 dollars per ton of 2240 lbs. The rate of wages at Caldera remains pretty steady at two to three dollars per diem, and this is the reason why the enterprise is less remunerative than would be the case if wages were lower.

The total annual yield of the copper and silver mines of the department of Copiapó is worth about 14,000,000 dollars, and gives employment to from 6000 to 7000 labourers, or one-third the entire population of the district.

On 20th May we anchored off Cobija, the sole harbour possessed by Bolivia on the west coast, and with a population of 1000. The state of affairs in Bolivia affords a marked example of how closely the development of a country is connected with the fact of its possessing more or less of sea-coast. How great is the commerce, the prosperity, and the civilization of Chile, a proportionally small strip of not over-fertile soil, but the entire extent of which is sea-coast, compared with the poverty and barbarism of the interior state of Bolivia, so admirably fitted by nature for raising all manner of valuable produce, but whose sole means of communication with the rest of the world is through one insignificant harbour!

The same day we reached Iquique, the southernmost harbour of Peru, with a population of about 4000, and which quite recently has increased greatly in importance, owing to the trade in saltpetre, which is found in immense quantities all along this rainless coast, and of which 1,000,000 hundred-

weight (50,000 tons) are exported annually to England, North America, and Germany, in which countries it is extensively and beneficially used for manure.* Here we found lying at anchor a large merchantman, the *Victorine* of Bordeaux, 3000 tons burthen, which was taking in a full cargo, exclusively, of this valuable product. The saltpetre is found between beds of clay from one to six feet below the surface, boiled in large vats to free it from impurities,† and dried in the form of cakes, which are packed for shipment in sacks of 250 lbs. It is worth, if purified, 21 reals (about 11*s.* 4*d.*) per cwt. on the spot, and fetches £16 to £17 per ton in England. Upon a rough calculation, the quantity of saltpetre along the coast of Peru at an average breadth of 30 miles amounts to 60,000,000 tons, enough to maintain the existing supply‡ for at least another thousand years. The rate of wages of the men engaged in the trade, owing to the scarcity of labour, is from two to three dollars per diem! The scarcity of water at Iquique is so great, that the town has to be supplied by means of a distilling apparatus, an undertaking the gross daily receipts of which are six hundred dollars! For the precious element has to be purchased not merely for men but

* See "On the Source and Supply of Cubic Saltpetre, or Nitrate of Soda, and its use in small quantities as a Restorative to Corn-crops, by Philip Pusey." London, W. Clowes and Sons, 1853.

† The proportion as found along the coast is 93 to 95 per cent. of saltpetre, to 7 to 5 per cent. of earth.

‡ The export, however, is constantly increasing. In 1858 it amounted to 61,000 tons, in 1859 to 78,000, of which 22,500 tons went to England, 15,200 to France, and the remainder to Germany.

animals; the price, for example, for a mule to drink *ad libitum* is one real, about $8\frac{1}{2}d.$

Tincal, or Biborate of Soda, is also largely found all along the coast, but the export was long prohibited, the suspicious jealousy of the Peruvian Government seeking to obtain first of all conclusive evidence of the value of this natural product, and the best means of making it contribute to the State treasury. At present about 200 tons, worth from £16 to £20 per ton, are exported annually. As we lay at anchor off Iquique, numbers of natives shot about with arrow-like rapidity in their exceedingly primitive boats, made of seal-skins fastened together in canoe-fashion. To avoid overturns, these curious specimens of naval architecture have bladders attached on either side!

The heat now began to be very perceptible. The bare, treeless, almost perpendicular sand-bluffs along the coast, impart to it a dreary aspect, which even the rocky chain immediately behind, rising some 2000 to 4000 feet, scarcely succeeds in softening. A great number of the passengers, mostly Peruvians, indemnified themselves for the cheerless monotony of the prospect on deck, by intense devotion to the mysteries of the green table in the saloon. All through the day, till far on in the night, the painted pasteboard flew from hand to hand. The favourite game was Rocambor, something like Ombre, diversified with Monte and dice, and for very high sums. I saw ten condors (£21) laid upon a single card. A few elderly gentlemen sat regularly in a distant corner of the

saloon, where they played assiduously from nine in the morning till midnight without interruption. One wealthy Peruano, well known along this coast, in the course of a single voyage is said to have lost 80,000 dollars (£16,800)! !

On 20th May we anchored in Arica, an elegant sea-port of some 7000 inhabitants, surrounded by beautiful luxuriant gardens, and which, though belonging to Peru, may be considered as the chief outlet for the produce of Northern Bolivia, since Tacna, the most important manufacturing town of that State, with a population of 12,000, is only nine English miles distant, lying at the foot of the Cordillera, while La Paz, the capital of the Republic, with a population of 75,000, is 288 miles distant, and is easiest reached from Arica. The political division of Bolivia is a crying injustice to that lovely country and its industrious population. The harbour of Arica belongs by natural position to Bolivia and not to Peru; commercial interests and general intercourse unite it far more intimately with Northern Bolivia than with Peru. The chief exports of Arica are silver, copper, alpaca wool, cinchona bark, chinchilla furs, cotton, and tin. There are also two steam flour-mills within the little town in full operation; the grain comes from the interior, and is shipped as flour to the various harbours along the coast. A railroad from Arica to Tacna greatly facilitates traffic and commerce, but further in the interior all intercourse is carried on by means of narrow mule-paths.*

* From Arica there are bridle-paths to Potosi, Oruru, Cochabamba, La Paz,

The houses, constructed for the most part of sun-dried bricks all along the coast of Peru, where rain is absolutely unknown, and even the dew-deposit is trifling, are flat, barely roofed in with thin strips of cane, and consequently when seen from the street have a very untidy appearance. Unfortunately these terrace-like roofs are likewise the sole receptacles for the refuse of the house, and any one who, in order to get a better view, ventures to ascend one of the adjoining dazzling white sand-heaps, will long remember the filthy but unique spectacle which greets his eye.

Immediately outside of the suburb of Chimba, the desolate nature of the country comes conspicuously into view. I next walked to one of the nearest sand-hills, because I was assured that there were numerous graves of queens to be found there, as well as quantities of mummies. Owing to the extreme dryness of the atmosphere, the skulls of the dead which here lay scattered upon the surface of the soil, seemed as though they were so many anatomical preparations. Even some dead bodies of animals showed no symptoms of decomposition, but had been perfectly dried. The peculiarity of the meteorological conditions, the extreme dryness of the atmosphere, and the saline impregnation of the soil, have very much more to do with these marvellous antiseptic appearances than any indigenous skill in embalming the Indian corpses; since,

Chuquisaca, and Calamaca, probably the highest inhabited point of the earth's surface, where a population of 800 souls live at an elevation of 13,800 feet above the level of the sea.

even now, when the brown Catholicized Peruvians have lost none of their old superstitions, though they have abandoned most of their former arts and customs, the dead committed to the earth without further preparation, present the same mummified appearance when disinterred. I took away with me the skull of an Indian, from the neighbourhood of Arica, which was remarkable for the singular malformation resulting from compression by circular bandages.

This artificial disfigurement of the skull has its origin in the peculiar customs of several Indian races of both North and South America, of mechanically altering the form of the cranium in the new-born infant. Of the difference in point of beauty of the different Indian races along the west coast of North America, a clear indication is afforded by the profile of the head of a native of Puget Sound, Oregon territory, for which I am indebted to the kindness of Dr. Ried of Valparaiso, he having been presented with it in 1856, by the medical officer of an American man-of-war. Here, in strong contrast with the oblong form of the cranium of an Indian from the neighbourhood of Arica, it appears that the skull has been flattened transversely, by pressure between two boards.

At first one is disposed to attribute the squeezed-in appearance of the head, remarked in different Indian races, here lengthened in an unsightly degree, there hideously flattened, to some freak of nature; but more accurate investigations leave no doubt that the deformity in question, in whatever form, is the result of pressure artificially applied, and that

this displacement of the brain is not confined to individuals, but is characteristic of entire tribes, yet without any sensible diminution of the intellectual faculties, or morbidity in their exercise.

The valley of Azapa, three Spanish leagues (nine miles English) distant from Arica, is very fertile, and a good soil, but badly supplied with water. However, at an expense of a few millions of dollars, a communication might easily be established with the waters of the river Arica, the expense of which would be amply repaid by the increased productive power thus given to the valley. Sugar-cane, vintage-grape, oranges, pine-apples, olives, and vegetables of every description, could forthwith be raised, and advantageously disposed of at Arica.

Among the Germans resident in Arica, we formed the acquaintance of M. Colmann, a merchant, and Consul for Chile, as also of Dr. Mittendorf, the latter of whom is physician to the Railway Company here. By the latter gentleman we were told that cuticular diseases, dysentery, and intermittent fevers were the most common ailments, but that on the whole the climate of Arica is healthy, and that many cases of illness were solely attributable to the irregular, licentious mode of life of the natives. Although it hardly ever rains, yet during the summer season (January to March), when the snows begin to melt in the interior, and tremendous falls of rain occur on the Cordillera, the beds of the rivers become torrents, wheeling along vast volumes of water to the sea, and partly

sinking into the soil, so that, at a depth of two or three feet, one comes upon water, or, at all events, moisture, while the surface remains burned to a cake. A little canalization of the river-bed, and damming up the water, so as to have a permanent reservoir, would not merely secure a better supply of water, but would most beneficially influence the salubrity of the neighbourhood. The river dries up entirely every year in the months of July and August, during which accordingly occur the largest number of cases of sickness, and it seems the more necessary that measures of some sort should be at once taken to control the water, as otherwise there is reason to fear that unless artificial dykes and dams be constructed, the bed of the river will gradually be sanded up, when the whole district will be worse off for water than ever; since with each successive year's floods, as they dash down from the mountains, a perceptible falling off in quantity has been remarked, so that whereas ten years ago the bed of the river was full for four or five months together, at present it is rarely full so long as two months in all.

On 22nd May, we entered the little harbour of Port d'Islay, the access to which is very difficult. The settlement itself stands on a steep rock, 150 feet high, descending almost perpendicularly into the sea on all sides, so that the only landing-place is a mole, which communicates with the village above by an iron ladder. The well-known traveller, Count Castelnau, who in the course of a scientific expedition through South America visited this port in 1848, prophesied a splen-

did future for it; but I do not believe that its commerce has materially increased since then.

The sole claim to consideration of Port d'Islay consists in its proximity to Arequipa, a city of 40,000 inhabitants, and the variety of valuable natural products which abound in that fertile section of country, from which, however, the port is separated by a sand-barren, 36 miles in width and 120 in length, the city of Arequipa itself being 7500 feet above the sea, at the foot of the volcano of the same name,* and amid a magnificent scenery.

The dreary waste between Port d'Islay and Arequipa is continually swept by drift sand, which, by constantly obstructing the road, renders travelling thither absolutely unsafe, and indeed frequently dangerous to life. For the unfortunate who misses his way amid these wastes is lost beyond all possibility of succour. The wandering sand-columns or *medanos*,† formed of drift sand, present a singular

* The volcano of Arequipa is 10,500 feet above its base, but 18,000 above sea level.

† "Peru; Sketches of Travel, 1839—42, by J. J. v. Tschudi." St. Gall, 1846: Vol. i. p. 335. Also, "Investigations on the Fauna of Peru." St. Gall, 1844—46. The author from personal observation speaks as follows of these singular sand-columns, whirling along before the wind. "Driving before a strong wind, the *medanos* speedily overleap all barriers, the lighter and more easily-propelled preceding the heavier like an advanced guard. Sometimes they are hurled against each other, when, so soon as they meet, they are dashed violently together, and break up simultaneously. Frequently a flat *stretch* of ground is covered within a few hours by a row of sand-hills, which within a day or two more resume their level monotonous appearance. The most experienced guides consequently become confused as to the way, and it is they who the soonest give way to despair as they wander blindly about among the sand-hills. The small mountain-spurs, by which the country is traversed

appearance as they spin along before a S. E. wind, admirably described by Tschudi in his valuable Sketches of Travel in Peru. These extraordinary pillars, which constantly change both their form and position, and complete the perplexity of the traveller, are usually semi-circular, 8 or 10 feet high, and from 20 to 50 feet wide, but occasionally they are seen 50 feet in height, when their diameter is about 150 feet. They are of most frequent occurrence in the hot season, when the parched sand obeys the slightest impulse of the atmosphere, whereas in winter, owing to the deposition of a fine penetrating dew (*gama*), which all along the coast of Peru supplies the place of rain, which is never seen, the sand increases in weight, and the basis of the column is solidified, so to speak, by the moisture absorbed. Between Port d'Islay and Arequipa, the *medanos* are first encountered about 18 miles inland, or nearly half way across the sand-barren.

In the dells near the harbour volcanic ashes are occasionally found at certain spots, whereas they are never discovered further inland, nor near the volcano of Arequipa, which since the memory of man has never been known to be in a state of activity, and whose beautiful cone, not unlike that of Ometepec in Nicaragua, seems to be densely wooded up to the very summit. Apparently these are the remains of former eruptions of a neighbouring volcano, which have

from W. to E., afford some sort of clue, but these oases are few and far between in the sterile wilderness around."

been borne towards the coast by the prevailing winds. The ashes themselves have no saline constituents, and are used by the natives in the manufacture of sun-dried clay-bricks (*adobes*), the quality of which they materially improve.

We made an excursion to a churchyard in the vicinity of d'Islay, where the skulls of some half a hundred human beings lay exposed to view. They all seemed to have been bleached by exposure, and were in good preservation, so that on many might still be discovered heavy heads of hair. The eyes had shrivelled up into the skull, and were by no means gleaming and crystal-like as is alleged of those found in Indian graves, and offered for sale to strangers. These so-called "crystallized human eyes," of which an Italian curiosity dealer of Arica possessed one or two sacks-full, belong to a species of mollusca (*Loligo gigas*), and were used by the Indians to adorn their dead. To this circumstance must be attributed the great number that are to be found in the graves in the neighbourhood of Arica.

We continued to coast along during the entire night. The number of passengers, especially of those on the "'tween decks," had again increased. Among the late arrivals was an Austrian, a Tyrolese, from Iquique, who was travelling into the interior of Peru. This man, seduced by dazzling promises, had in 1856 emigrated to Peru with 293 of his fellow-countrymen, and after two years of the most terrible hardships and privations, at last succeeded in finding employment at the salt mines of Iquique. He was now

earning 3 dols. a day (12*s.* 6*d.*), and was on his way to fetch his family away from the colony of Pozúzu, and taking them with him to the scene of his labours. That none of his countrymen did not follow him was, as he explained to us, in consequence of one of the colonists, "a half student," dissuading them from doing so, and himself leading them to try their luck at another spot, where unfortunately they had to battle with want in its severest form. I have rarely seen any man so excited and agitated at the sound of his native tongue as this hearty specimen of the sons of the Alps, when I addressed him "in good Austrian," and shook him by the hand. The reader will find further on, in the account of my stay at Lima, a more full account of the Tyrolese colony at Pozúzu, its present condition and possible future.

On 23rd May, at 6 A. M., the steamer anchored off Chala, which first attained the dignity of a sea-port in 1857, being intended to facilitate intercourse and increase the trade with Cuzco. Chala is the nearest harbour to the ancient capital of the Incas, 240 miles distant. Though singularly ill-adapted for a port, being, in fact, nothing but an open roadstead, Chala bids fair to become a place of some importance, so soon as the country is at peace, and a good road is constructed hence to Cuzco, so as to be able to convey with dispatch the numerous valuable products of Cuzco. When we visited it, the little settlement, barely a year old, had 212 inhabitants, in some thirty wooden huts extending along the

sandy shore. The chief exports are wool and copper, the latter being found at Chaipa and Atiquipa, nine miles N. of Chala.

The following morning, after passing the *Barracoon* of Pisco, a rather dangerous passage beset with low islands between Barraca Head (on Sangallan Island) and Huasco Head (a projecting headland of the mainland), we reached Pisco, also nothing but an open roadstead, the tremendous surf in which does not admit of ships approaching within two or three miles of the shore. Several years before a Mr. Wheelwright had commenced to construct a mole here, to project some hundreds of feet into the sea, so as to facilitate the loading and unloading of ships and the embarkation of passengers, but the works were still unfinished, and indeed would need to be very largely added to ere the object aimed at could possibly be obtained. On the declivity of Barraca Head sloping seaward are visible three marks in the form of crosses, which, according to tradition, were made in the sand by the pious monks of former centuries. Their size must indeed be colossal, since, though we passed from four to five miles off, the outlines of the three figures were plainly visible. Well-known as this phenomenon is to everybody, no one has ever had the curiosity to make an excursion thither from Pisco, so as to clear up the fact of their being actually the work of human hands, or, as seems more probable, simply columns of drift sand, like the *medanos* of Arica,

thrown into this fantastic shape by the caprice of some passing storm.

The chief staple of cultivation at Pisco, and throughout the province, is the vine. I never tasted such delicate, juicy, luscious grapes as those I got there. They are chiefly used in the manufacture of the well-known "Pisco," a sort of "Aguardiente" (burning water, sc. brandy), the consumption of which is extraordinarily great. There were also fruits in most diverse profusion, chirimoyas (a species of anona), bananas, aguacales, mangoes, pine-apples, lemons, oranges, peaches, apples, pears, &c., which are grown here of the most delicate description for the market of Lima.

Pisco is the first point along the entire barren coast at which the traveller, since leaving Valparaiso, sees the shores covered once more with vegetation. With inexpressible relief the eye rests upon the green carpet which, on all sides, gleams forth, even between and among the houses. The place has about 3000 inhabitants, and possesses numerous churches, whose lofty belfries impart to it quite the appearance of a large town. About 45 miles inland, in a lovely and fertile valley, lies the large city of Ica, with which there is considerable traffic, and the chief product of which is also the grape-vine. Ten English miles N. of Pisco, and, in fact, opposite the town, are the renowned Chincha or Guano Islands, and towards these our course was now directed. These are three small islands rising close to each other out of the bosom of the

sea, the most north-easterly of which has been the most stripped. Here also is the chief village, consisting of upwards of 100 wooden huts, inhabited by some 200 to 250 persons. In 1858 there were some 2000 men living on the islands, while several hundred ships at a time would be lying at anchor in the harbour, loading with the valuable excretions of innumerable sea-fowls, of which the islands chiefly consist. When we visited them, the depredations had somewhat fallen off, the number of labourers was diminishing, and there were only a few vessels in the harbour.

The islands have a melancholy, naked, barren look; the same substance which, in smaller quantity, contributes so powerfully to promote the productiveness of the soil, to which it is applied, here stifles all vegetation, by reason of its very abundance, and fails to show any trace of that fertilizing principle which lies concealed within it.

The northern island is about 4200 feet long, and 1500 to 1800 feet wide. Its height is from 150 to 180 feet. The *Huanu*,* consisting of the excrement of various descriptions of sea-birds, chiefly sea-mews, sea-ravens, divers, and *laridæ*, forms strata, sometimes of a greyish brown, sometimes of a rusty red colour, which at some points attain a thickness of 120 feet. The huts of the settlers are erected on the very

* The ordinary mode of writing the word "Guano" is erroneous, as already remarked by Tschudi, as the Quichua language, to which the word belongs, is deficient in the consonant G, among others. The Spaniards first converted into a G the strongly aspirated H of the original, while the last syllable "nu," which so frequently terminates the words adopted from the Quichua, was changed by them into "no."

guano beds. A handsome, comfortable hotel has latterly been added. All the necessaries of life, even drinking water, have to be brought from the mainland, 14 miles distant. Living, consequently, is very expensive on the island, though there is anything but privation, or even lack of enjoyment. One of the inhabitants, a Swede, who has a small store on the island, observed to me, "We live as well and comfortably on the Chincha Islands as anywhere on the globe, and have occasionally even music and a dance!"

In May, 1859, the population consisted of 50 Europeans, 50 Chinese, and 250 Peruanos and Negroes. The majority were labourers, who were in great request as "*Mangueros*" or "*Abarrotadores*," and were busily engaged in excavating the indurated excrement, and transporting it to the various points for lading. The daily wages of the free labourers was 1 dollar 50 cents (about 6*s.* 3*d.*) per diem; the Chinese, on the other hand, received only 5 dollars per month, and a daily ration of rice. One Peruvian planter, Domingo Elias, had imported at his own cost several hundred Chinese coolies, who, like those in the West Indies, were to pay in labour for the expense of their voyage. The remuneration given to these hardy sons of the Middle Empire was of the scantiest. While they had to work alongside of convicts, longer and harder than any other class of labourers, they only received one-tenth of the pay of the latter.

The sanitary condition of the settlement was described to me as exceedingly favourable. The guano-getters contribute

the smallest contingent to the sick list, and even the strong, penetrating, and exceedingly disagreeable stench of the substance, impregnated as it is with ammonia, seems to have not the slightest prejudicial effect upon the lungs, pulmonary complaints hardly ever making their appearance among the workmen. So far from this being the case, it is even contended that persons suffering under affections of the lungs derive benefit in the first stage of the malady from a residence in the Huanu Islands, and find themselves in improved health on their return to the mainland.

The centre island has been only partially excavated, but the works there have been discontinued. At present it is entirely uninhabited, though there are still visible on its summit a few wooden huts, which formerly sheltered the workmen, as also some of the " shoots " or slides used for facilitating the collection and shipment of the guano.

The southernmost of the three islands is quite in its primitive state, never having been touched. No sign indicative of man's presence on it is anywhere visible.

The earliest attempts to export guano to Europe as a manure were made in 1832, but they proved so losing a speculation, that not till eight years later did the Peruvian mercantile house of Messrs. Quiros again direct attention to the importance of guano as an article of export, when the Government of Peru granted them, for a fixed sum, the exclusive privilege of exporting guano for six years. This gave an opportunity for instituting, on a sufficient scale, those experi-

ments which, it will be remembered, Mr. Meyer of Liverpool was making at that period, and which was followed by such surprising results.

From March to October, 1841, 23 vessels conveyed 6125 tons of guano to England, Hamburg, Antwerp, and Bordeaux. In November of the same year, the English barque *Byron* brought to Peru the cheering intelligence that a ton of guano was selling in England for £28 per ton. This totally unexpected and startling result induced the Government, by a decree of 17th November, to declare that the agreement with Messrs. Quiros was cancelled, and fresh offers for the privilege of shipping guano were invited from speculators.

Since that period the exportation of this important manure has attained unprecedented dimensions in every part of the globe. Of late years it has reached the enormous amount of 500,000 tons from these islands alone, and the revenue to the Government has been 12,000,000 to 15,000,000 dollars.

The contractors sell the guano in Europe for account of the Peruvian Government, and receive for it a commission fee of from $3\frac{1}{2}$ to $4\frac{1}{2}$ per cent. of the gross amount; for this they get, moreover, paid 5 per cent. of interest for outlays and pecuniary advances (pretty considerable) which they make to the native Government. The contracts are generally entered into for four years.

A complete exploration and survey of the islands was made in 1853 by M. C. Faraguet, a French engineer. According to his report, which was pretty comprehensive, and drawn

up under the co-operation of several other scientific gentlemen, the quantity of guano on the northernmost island, in September, 1853, was 4,189,477 Peruvian tons (about 3,740,866 tons English); the middle island about 2,237,954 English tons, and the southernmost 5,072,032 English tons; or the entire cubical mass was at that period about 11,050,852 tons English. Assuming an average price, this would imply a money value of about £120,000,000. Since 1841, when the first considerable shipment was made, to 1861, there had been exported from the Chincha Islands 3,000,000 tons of guano, worth about 135,000,000 dollars (£29,250,000).

At first, owing to the enormous mass of guano left to accumulate undisturbed for centuries, the very natural error was made of reckoning the quantity deposited at too high an estimate, and the amount annually taken at too low a figure.* Hence it happened that a few native and many foreign writers have spoken of these islands as affording a supply which only centuries could exhaust. It is now, however, ascertained that, supposing the export proceeds at its present rate, only 25 to 30 years will elapse ere the entire strata of

* Only the immense numbers of sea-fowl, their extraordinary voracity, and the bounteous provision for supplying them with food, can furnish any possible explanation of the enormous mass accumulated here, even allowing for such a lapse of time. Mr. Tschudi, in the course of his travels in Peru, once kept for several days a live *Sula variegata*, which he was continually feeding with fish. He carefully collected the excrement, when, notwithstanding these birds eat much less in captivity than in a state of nature, it voided in a day from 3½ to 5 oz.! According to other investigations in natural history, it seems that the pelican eats 20 lbs. a day of fish.

excremental manure of all the three Chincha Islands will have been carried off!

Notwithstanding ample supplies of guano have been discovered besides all along the west coast of South America, on uninhabited islands and promontories, and upwards of 7,000,000 tons of this valuable commodity been found on the islands south of Callao alone,* yet, even should this statement turn out correct, it would only supply the existing demand for other 10 or 15 years, while the formation of beds of guano must year after year become more and more confined to solitary, inaccessible islands of the Southern Ocean. For so soon as such beds of guano begin to be explored, they are quickly abandoned by the birds, which are gradually retreating from the islands along the coast and the usual channels of commerce.

The Peruvian Government does not seem to realize the calamity impending over the country on the exhaustion of the guano beds, which would dry up one of its principal sources of revenue. Certainly it seems impossible to make a more unwise use of the immense sums which are flowing

* Beds of guano have also been discovered lately by Captain Ord at the Kooria-Mooria Islands, on the south coast of Arabia, in 18° N. 56° E., 850 miles E. N. E of Aden. Here any ship can load this valuable cargo on paying a duty of £2 per ton to the English Government, which has recently established a colony at the bay and islands of that name, and has made it a coaling station. But the African guano is by no means so strong or so pungent a manure as that found on the rainless coasts of Peru, where certain peculiarities of climate combine to make it less liable to diminution of its saline virtues by dissolution or liquefaction.

into the State treasury. Nothing is done for making roads or railways so as to furnish intercourse with the fertile provinces of the interior, or to raise and encourage agriculture or commerce. Just as this revenue does not result from the energy or industrial activity of the people, it is expended without any object of utility to show for it. The Government pockets the dues as a monopoly, and expends the sums thus obtained in avaricious schemes of aggrandizement, or warlike expeditions against Ecuador and Bolivia, which keep the country in perpetual hot water, and only add to its burthens. The guano duties go in gunpowder! Lightly won, as lightly gone!

During the nine days of our voyage between Valparaiso and Callao de Lima there were some musicians on board, who gave us a concert on deck every evening. As we left the Chincha Islands some frolicsome young Peruvians, disregarding the discord of the flute and violin, and unmindful of the timeless tuneless twanging of the two harps, got up a dance.

In the course of the night we ran into Callao harbour, and when I came on deck, in the cool of the morning, I found we were already lying at anchor in this spacious and secure port. The tradition that with a calm sea and a clear sky it is possible to perceive the ruins of the old town, with its houses and church-towers, which sank here suddenly in 1746 by the shock of an earthquake, has survived to the present day, and is told to every new-comer, who greedily swallows it down, though not one of the narrators has ever beheld the

marvel with his own eyes! Earthquakes, indeed, are by no means so frequent as at the beginning of the present century, when it was rare for a fortnight to elapse without at least one *temblore* or horizontal oscillation. The vertical shocks (*terra-motos*), the most dangerous kind of earthquake, have not occurred here since 1828. The season at which earthquakes most frequently occur are the months of March, April, and September, whence the latter month has received from the people the jocular name of "*Se tiembla!*" (it trembles!) One Peruvian who has long occupied himself with scientific observations has repeatedly witnessed that a magnet, freely suspended, regularly lost its attractive powers a few minutes before each shock, and that a piece of steel held by the magnetic force fell to the ground. If this be confirmed by a series of observations the magnet might ultimately become a sort of earthquake-monitor.

The Callao of the present day is a dirty, ugly hole, with narrow streets, and low houses built principally of mud and cane, with flat roofs. Only a few of the houses of foreigners, erected out of hearing of the hubbub of the port, form a grateful exception. The entire population will be about 20,000 souls.

The most interesting building of the port is undoubtedly the new Custom House with 31 colossal magazines, each capable of containing six to eight entire ships' freights. I repeatedly heard complaints made of the slovenliness of the attendants, in consequence of which it frequently happened

that days elapsed ere goods, paid for, were delivered out of bond. The warehouse charge is very small, and consists chiefly of stamp-duties, which are imposed on the money paid for goods. The trade of Callao is apparently on the increase, and, considering the productiveness of the country, would be even greater, were internal order restored, when peace and confidence would follow in its train.

As I had to prosecute my journey northwards by the next steamer, I hastened on to Lima, so as to satisfy my curiosity as to this the most important city of Peru in modern days. A few hours after my arrival in Callao, I found myself on the road to the "City of the Kings."* Only a few years back the journey from Callao to Lima, though only six English miles, was an exceedingly arduous and even dangerous undertaking. The road lay through a shadeless desert of deep sand, between uncultivated fields and low scrubs, and was absolutely unsafe owing to attacks of robbers. Now it is a frequent excursion, a tolerably good railroad performing the distance in about half an hour.

By the kindness of Mr. Wilhelm Brauns, the Consul-General of Hamburg, and head of the distinguished English house Huth, Grüning, and Co.,† to whom I brought letters of

* The day on which Lima was founded by Pizarro was the 6th January, 1534, which according to the Catholic calendar is that dedicated to the Three Kings of Cologne, whence, in conformity with the religious customs of the period, the city was named "Ciudad de los Reyes" (City of the Kings).

† I feel it a pleasant duty to express here publicly how much I am indebted to the representatives of this celebrated firm in the different ports of South America, and to

introduction, and who was most kindly in waiting for me. I was speedily and pleasantly conveyed from the station in Lima, to take up my quarters in his house till I took my leave. Owing to this fortunate event, I found myself unexpectedly brought into the very thick of the very best German society. Nowhere in the course of many years of travel in various countries, all over the globe, did I meet with more cordial hospitality, or a more delightful reception, than during my 19 days' stay in the "City of the Kings."

On our way from the station to the house of Mr. Brauns, I remarked that the houses in every part of the city that we passed were painted with variegated stripes, and heard, to my intense astonishment, that, in consequence of a recent decree of the Government, every householder in each quarter was ordered, with a view to facilitating the identification of their houses, to paint them of a colour corresponding with the coloured official plans of the city! Accordingly in one quarter all the houses were green, in another yellow, in a third white, in a fourth reddish, and in a fifth sky-blue. As in all Spanish-American cities exposed to earthquakes, most of the houses in Lima also are but one storey high. The larger buildings are constructed of sun-dried bricks or fire clay, the smaller of cane set up double, with the space between filled up with clay, and the whole whitewashed. Their most singular feature is the flat roofs, which consist of a layer of

the head of the house in London, for the kind and generous manner in which this gentleman endeavoured to facilitate and advance the objects I had in view.

cane and straw mats, which, for better security, occasionally have a coating of clay. Thus an open space (*Azotea*), surrounded by balustrades, is secured, which is used as a playground by children, and serves as a promenade for the grown-up portion of the community. Some of the windows communicate with the roof by a sort of trap-door, which instead of sashes of glass has shutters of wood, which communicate with the rooms beneath by a long cord, so that they can be opened or shut from below at pleasure. Many of the chambers in the interior of the house get light and air solely through these apertures (called *Ventana de Teatinas*, because first introduced by the Theatine monks), while windows properly so-called are less numerous, and when looking towards the street are usually provided with large, broad, sometimes richly-gilt iron shutters. We saw these curious cords for opening and shutting the trap-doors in the roof hanging down in the middle of even elegantly-furnished apartments, and not even the circumstance of being made of silk prevented their having a peculiar and ungraceful effect.

The mode of constructing the houses, together with the elegant ornamentation of the open courts (*patio*) of the interior, speedily remind the stranger that he is in a place where rain (at least according to Northern ideas) is an unknown phenomenon, since one single, even down-pour must inevitably do immense damage in the Lima of the present day. During the winter months, however, as they are called, viz. June to November, fogs (*garuas*) are very frequent, which, albeit light,

are sufficiently penetrating thoroughly to soak the pedestrian or horseman who happens to be surprised by them. I have myself repeatedly experienced in Lima fogs of such density, that it was quite practicable to count each separate drop. During these winter months, fine, clear days free of all cloud are comparatively rare; but the statement one occasionally hears, that for five months together the sun is invisible in Lima, is an exaggeration. The temperature of Lima is much lower than we could expect from a city within 12 degrees of the Equator, and seems to be affected principally by the proximity of the eternal snows of the Andes, and the prevailing atmospheric currents. The thermometer never rises higher than 85°.8 Fahr., nor falls below 68°.2 Fahr. The average temperature during the hot season is 77°, and during the cold 63°.5 Fahr. Such a climate renders fires superfluous, and it is more habit than necessity that induces some Spanish families to carry about copper or iron pans (*Brasero*) filled with live coal, with which to warm their hands or feet.

The exteriors and internal equipments of the dwellings are very simple and devoid of ornament, only a few of the older buildings, such, for instance, as the house of Torre Tagle, near San Pedro, forming the exception. Among the architectural decorations, which preserve to the present day the tradition of the glories of the Peruvian kingdom, one may marvel at majestic designs and beautiful mosaics, which even in their ruin tell of the magnificent luxury that was once indulged in here.

The streets are wide and tolerably regular, but the absence of gutters and the wretched foundation of the roadway prevent their being used by carriages or horsemen, or by pedestrians even more than they can help. The open ditches at either side are full of filth and animal impurities, which are continually being thrown in, and but for the services of numerous carrion crows (*cathartes fœtens*), who perform the duties of scavengers, Lima, owing to the supineness of the native authorities, would be one of the filthiest and most unhealthy cities in South America. But the *gallinazos*, as these black-headed birds are called by the natives, although lazy and unwieldy, nevertheless are in such immense numbers here, that they suffice to keep the streets comparatively free from putrescent odours. Everywhere, even in the thick of places of public resort, one sees these birds, which no one injures on account of their usefulness, and which even the rising generation never think of disturbing in their disgusting avocations, hopping about upon the bare ground, and gorging themselves on the garbage around.

One of the greatest improvements to the city is its almost universal illumination by gas, which in the evening imparts a peculiar charm to the streets and fashionable shops of Lima, and enables them, in this particular at least, to vie with those of the capitals of Europe.

The largest buildings in Lima are, as we might expect from a country conquered and colonized by Spaniards, the churches and monasteries, of which there are in this capital

no fewer than eighty. Many of these Spanish memorials, of a religious epoch more bigoted than sincere, are at present decayed, and even those which are still preserved in something like good order fail to charm the eye by any graces of architecture or majestic simplicity in their interior fittings up. The Cathedral even, which takes up almost the entire east side of the chief square, is no exception to this rule, and, though it was 90 years in erection, is after all a very indifferent edifice. The interior is lofty and spacious, but owing to the choir having its proportions curtailed by a wide altar in the midst, one perceives on entering the church only the smaller half, so that the impression is destroyed, which, but for this interposed erection, would undoubtedly be made by the high altar, richly overlaid with gold and silver, seen through the vista of the entire building. The ornaments, the sacred vessels, and censers used in performing mass are exceedingly rich and valuable, but are too much overlaid to please an æsthetic taste. In the catacombs of the Cathedral repose the remains of Francisco Pizarro. Few strangers omit to visit this spot, and usually feel as much surprised as pleased at finding offered them for sale by the sacristan, various sorts of relics of the renowned conqueror of Peru, though all cannot hope to be so fortunate as an English lady at Lima, who informed me with all gravity that she had purchased from a guide a slipper taken from the coffin of Pizarro. Should this mania for relics on the part of visitors, and readiness to humour it on the part of vergers, continue

unchecked, there will remain ere long in the catacombs only an empty shell, in which once lay the celebrated Conquistador. Perhaps, though, the speculative sacristan contents himself with gratifying the wishes of curiosity-loving visitants, by means similar to those of the artful cicerone who accompanies the enthusiastic stranger in his rambles among the ruins of classic antiquity.

The monastery of San Francisco is more worth notice for its immense extent, which equals in size many an old imperial walled city of Suabia, than for elegance of style or tasteful artistic interior. The façade, painted in various colours, and overlaid with ornament, resembles by far more a Buddha temple than a Roman Catholic church. The corridors are the finest part of the building, their wooden ceilings being very richly carved. On all the walls of the passages are suspended drawings illustrative of the lives of various holy men, which, however, singular to say, are hung with their faces to the wall, and are only turned round on appointed festivals to charm the eyes of believers!

The church is very roomy within, but quite bare of ornament. The sacristan with evident pride directed our attention to San Benito, a "black" saint, who was held in high esteem by the negroes, probably on account of his colour. Quite close to the monastery is the "Casa de Ejercicios," whither the monks repair at certain periods of the year to perform the prescribed religious exercises. The cells here have a more comfortless look than in the cloister proper. A

bed-frame with a skin stretched upon it, a hard stool, a plain table, a crucifix, and a human skull, comprise the entire inventory. The latter, the cranium of a departed brother, was covered with numerous aids to religious meditation, some written, some carved on the substance of the bone.

The lay-brother who escorted us round had not long been a denizen of this gloomy monastic abode. Though still very young, he was leaving behind him a tolerably enlarged experience of the world. Starting as a gold-digger in California, he became a gambler and speculator, when he quickly lost all he had so laboriously wrested from the soil, and returned to Lima, where, more for the sake of change and comfort than for any special vocation or imperious spiritual necessity, he had entered the order of Franciscans. His temperament being much more that of a man of the world than a monk, he must have felt himself sorely hampered by the restrictions of monastrism, were it not for the lax morality which is the standard of convent life in the capital of Peru; but the monk's cowl is in Lima not only the attire of humility and resignation, it is likewise the cloak for all manner of licentiousness and hypocrisy—the "*surtout*" which conceals many a lapse from virtue!

The monastery of San Pedro was the wealthiest in Lima, so long as it remained the property of the Jesuits. When, in 1773, the order went forth for the suppression of the Order throughout South America, it was not executed without the Spanish viceroy's cherishing certain secret hopes of obtaining

large riches. The Jesuits, however, on this occasion vindicated their reputation for subtlety, which has become proverbial among mankind. When the inventory was taken, nothing but empty boxes were to be found, and the most strict investigations and inquiries led to no more favourable result.

Among the hospitals which we visited, that of San Andres deserves foremost notice for its size and comprehensiveness. It has room for 600 patients, who are tended by 50 *Sœurs de la Charité*, the majority of whom are French. The yellow fever, which, introduced in 1852 by immigrants, penetrated deep into the interior, though of a milder type, had of late carried off numerous victims, and indeed had seriously weakened the hygienic good name* of Lima; the small-pox also had annually committed fearful ravages; for vaccination is not made imperative by law, and inoculation is therefore neglected. Besides the hospital of St. Andrew, there are others for female patients, for the military, for incurables and imbeciles, an asylum for orphans,† and one for foundlings.‡

* One of the most distinguished physicians of the capital, Dr. Archibald Smith, has collected some interesting particulars, with the dates, respecting the outbreak of these fearful maladies, which we intend to publish elsewhere.

† This institution is also in charge of the Sisters of Charity. There were only some ten or twelve children in course of education, who, however, seemed to be in excellent health and well fed. When I expressed to the lady superintendent my astonishment that the establishment was not more extensively patronized, she replied, "*Los ninos se crian en la Calle!*" (The children are here brought up in the streets.)

‡ There are in Lima 46 private lying-in establishments. The mothers are extremely loth to separate from their children, and if great difficulty be experienced in

The best managed hospital apparently is that of Santa Anna, the wards of which are roomy, light, and airy, and make up about 350 beds. On the other hand, a portion of the above hospital set apart for those mentally afflicted, as also the regular Lunatic Asylum (*casa de Locos*), were in a state of filth and neglect, that are a positive disgrace to the present century. It is, in fact, a singular consideration that in every quarter of the globe men have only now begun to bethink them of their duties to those unhappy fellow-creatures, whose wretched lot should have commanded their most active sympathies! The reform of hospitals, and even of prisons and penitentiaries, had long been carried out in Europe, before asylums especially designed for the treatment of lunatics were projected. I must not, however, omit to add, in justice to the philanthropic society (*Sociadad de Beneficiencia*), to whose management the whole of the hospitals and poor-houses of the capital are intrusted, that a new Lunatic Asylum was in course of construction, the cost of which will amount to 85,000 dollars (about £17,800).

The *Hospital de los Locos* (Hospital for the Insane) in the Cercado is all on the ground-floor, with chambers used at once for sitting-room, dining-room, and bed-chamber, but with accommodation for about 200 patients. Twenty of the cells are set apart exclusively for refractory patients. The institution is in charge of Dr. Ulloa, one of the most skilful

getting wet-nurses, this is to be attributed far more to the love of the mothers for their children than to strict morality among the mass of the population.

of the native physicians, who studied both in France and England. The patients are tended by the Grey Sisterhood, which has only recently reached the country.

The old university buildings, on what formerly was called the Square of the Inquisition, now named Independence Square, are at present only used for festivities, examinations, conferring of degrees, &c. &c., while the different lectures are read in various buildings. I visited the School of Medicine, of which at that time Dr. Cajetano Herredia was rector, a gentleman more respectable for his zealous discharge of duty than by his scientific attainments. There are some good lecture-rooms, a chemical laboratory, a small museum, consisting mainly of pathological specimens, and a very fair library, which boasts several really valuable and little-known prints and books, especially such as relate to the history of Peru. One of the Professors, Don Antonio Raimondi, a Neapolitan by birth, bids fair to raise the reputation of the School of Medicine of Lima by his extensive knowledge and excellent mode of instruction. This gentleman teaches several branches of Natural History, and, during the short period he has been in Lima, has already given practical proof of his activity in a variety of fields.

Unfortunately Professor Raimondi, with a number of his pupils, was absent on an excursion for practical scientific instruction, so that I was deprived of the opportunity of making his personal acquaintance. In his studio I saw two very remarkable skulls of Indians, which, owing to artificial pressure,

had assumed a most singular form, one of which had belonged to an Indian of Cuzco, the other to a native of the Chincha tribe, who reside between Pisco and Cañete. I was also shown on the same occasion a female skull in such excellent preservation, that one could still easily perceive the expression of the face. This was the skull of a half-breed Indian woman, named Maria Palacel, aged 25, who had died in the hospital of Santa Anna, 27th Sept. 1856, of dysentery, and on 1st March, 1859, nearly two and a half years later, had been disinterred in a state of complete preservation. Nature had in this case taken on herself the process of embalming, and had, owing to the dryness of the atmosphere, and the quantity of saline matter in the soil, secured results which in Europe could only have been obtained artificially and at a considerable expense.

Adjoining the Escuela de Medecina is the National Library, a large building containing some 30,000 volumes, treating of every department of human knowledge, but which, owing to want of means, has of late years received hardly any accession. The librarian is Don Francisco de Paula Vigil, a highly intelligent and liberal-minded priest and man of the world, who had been excommunicated by Pio Nono on account of his learned work, "Defence of the Principles of Secular Authority against the Pretensions of the Holy See." Nothing daunted by the fulmination of this penalty, the excellent old gentleman is prosecuting his researches yet further, and is energetically defending his principles; and what

is still more surprising, he has anything but fallen off in public estimation in consequence. This is due to the fact that, unlike the female population, the Peruvians are very tolerant in religious matters, and rather averse from those pre-disposed to spiritual matters, whence there results the very small influence of the Peruvian clergy, everywhere visible, and the obstinate virulent enmity with which also, since the Spanish yoke was cast off, the priestly party oppose the progress of liberal ideas. This feeling is moreover powerfully aided by the ghastly testimony of history, that it was the monks who first introduced the rack and the Inquisition into the country.

Father Vigil received me with much cordiality, and we had a long talk upon a variety of subjects. At last it turned upon his own well-known work, and the painful position in which he felt himself with respect to the See of Rome. This was the most interesting portion of our conversation. "It is not Catholicism that has made the majority of Catholic nations lag so woefully in the career of progress," exclaimed the venerable priest, "but that which Catholicism has suffered to be mixed up with it,—the Inquisition and Monasticism. It is marriage and labour that make individuals moral and useful, and nations great and powerful. Human society can get on very well without monks or nuns, but not without morals, not without matrimony and labour."

Had I not transcribed these words almost at the moment they were spoken, I should hardly have dared to repeat them

here, for I durst not have trusted to my memory, that a Spanish American priest, should have made such a remark in the "city of the Three Kings." These revelations, which are far from being solitary, but find a responsive echo in the bosoms of a portion at least of the male population of the capital, are highly important in arriving at a conclusion respecting the actual religious sentiment of the Peruvian Republic, and are very marked indications that an immense movement is likewise preparing in the Catholic Church on the further side of the Andes; and that Peru also has found its "Father Passaglia." Nay, it would not surprise me in the least, should South America, which for upwards of three centuries has been dumbly obeying the behests of spiritual intolerance, suddenly emit letters and propositions which would amount to a virtual separation from the Roman Catholic Church! It is but a few years since Catholic priests in the Legislative Assemblies of Nicaragua and Honduras recorded their votes in favour of repealing the ordinance of celibacy, and from their pulpits harangued their flocks on the advantages of revolutionary insurrection!

In a wing of the Library buildings is the National Museum, which, however, merely fills two moderate-sized apartments. The Natural History collection is in such a wretched neglected state that it is in imminent danger, the ornithological department especially, of being entirely eaten up by insects.

Amongst the most valuable are some Peruvian antiquities, such as weapons, mummies, and what are called *Huacos*,

earthen jars, pots, and other utensils from ancient Indian graves. To the historical student the portraits of the whole of the Viceroys and Governors of Peru, which are suspended on the walls of the first apartment in chronological order, will prove extremely interesting. The finest head of the series, the one which most clearly tells of manly vigour, acuteness, and energy, is that of Francisco Pizarro, the natural son of a Spanish nobleman, who tended swine in his boyhood, and ended his life as Viceroy of Peru, having been slain by an assassin in the 64th year of his age.

Of the educational institutions, the only one deserving special remark is the "Escuela Normal Central" (Central Normal School), established by Government, at an expense of 160,000 dollars (£33,600), and opened in 1859. Its object is to provide suitable school instruction for industrious children of poor or aged parents; but hitherto the prefects of the provinces have, by protection, presented almost exclusively children of persons of means and position, and sent them on to the capital. Owing to the great want of good schools hitherto, it happens that every one crowds towards this new institute, which seems to promise to its pupils a more complete education and better training than any other. The number for which it was destined was 40 boarders and 200 day-scholars, the former of whom are well taken care of.

The system of education pursued is the Lancasterian, and is carried out by five professors. The estimated annual expenditure is about 20,000 dollars. One of the directors, Mr.

J. C. Braun, a German by birth, who not long before had come to Lima to settle, and taught Natural Philosophy and Chemistry, accompanied me throughout the extensive building, and specially pointed out a class-room comfortably and even elegantly fitted up, as also a small museum of Natural History, with an excellent geological collection, and a small library attached to it. Singularly enough, the latter comprises a great number of school-books in much request among Protestant pedagogues. Apparently an order had been sent, without specifying any particular writers, to purchase good school-books at some German publishing-house, and now the Catholic youth of bigoted Lima is taught from the works of Protestant teachers! Various surveys and maps covered the walls of this class-room, all bearing evidence of their German origin in the names of publishers and places, most of them having been sent out from the distinguished house of Justus Perthes in Gotha.

One very remarkable and characteristic incident occurred at the opening of the school, at which were present the President of the Republic, Don Ramon de Castella, so hated and dreaded for his despotism, together with several senators and deputies. The Rector, Don Miguel Estorch, laid considerable stress, in the course of his address, upon the importance of really effective schools in a State, and maintained that, when children are well brought up, there is no longer any need of so large sums being spent for police and standing army to keep up security and order in the country. This remark, which made

a deep impression on all present, nevertheless gave much offence to the President, who rose and replied, in a tone of considerable asperity, that the Rector's view was erroneous, and that a proper military force was as indispensable as a good system of education; that it least of all became the Rector to touch upon such a topic in that place and such presence.

Under the present political *régime*, it is out of the question to look for anything like intellectual vigour in Lima, so sparse are the elements of such. There is an utter absence of that sympathy, interest, and support which is necessary to its existence, alike on the part of Government and of society at large.* Works, such as Manuel Fuentes' valuable "Estadestica General de Lima" (General Statistics of Lima), can only be considered as solitary special performances. Also in the

* A Peruvian author, Don J. A. Delavalle, gives in one of his works the following severe, yet faithful, portraiture of the state of letters in his native country:—"En un pais en el que el cultivo de las letras ni constituye una profesion, ni crea una posicion social, ni procura lo necesario—no decimos para lucrar con ella—para conseguir el sustento para la vida, nos admiraremos de que haya quien escriba en Lima, y reputaremos como extraordinario el número de obras que han salido de sus prensas en 1860, por muy pequeño que este haya sido. Sin proteccion, pues, y sin estimulo, ni oficial, ni social, ¿qué se podrá esperar de las letras Peruanas?" (*Translation of the foregoing.*) "In a country where the cultivation of letters is not a profession by itself, where literature confers no social position, and barely procures the necessaries of life,—we do not speak of realizing competence and independence,—we marvel there should be any one in Lima who writes at all, and we consider little less than extraordinary the number of books which have issued from its press in 1860, insignificant as the sum total may be. Without protection, without influence, and without stimulus, official or social, who can suffer himself to hope for a better future for Peruvian literature?" (Compare Peru in 1860, in the National Annual Register, by Alfredo G. Leubel, Lima, 1861.)

field of Journalism there is no person of mark visible, and even the few journals which appear in Lima, such as the *Comercio* and the *Independiente*, have a very limited circulation. As only a small proportion of the population can read or interest itself in politics, the principles advocated in those journals exercise no influence, so that Government has less difficulty in acting up to them than would otherwise be the case.

One thing that particularly struck me was the hostility displayed to Austria, which, during my stay in Lima, manifested itself in the daily press and a fraction of the population. The politics of Austria were discussed with a bitterness of hate, which was the more surprising in a nation which is itself a prey to intestine disorders, and suffers itself to be led about a willing captive, in the fetters of a half-Indian despot. I found, however, the clue to this excited language, when I learned on one occasion, that there are upwards of 8000 Piedmontese in Lima and Callao alone, chiefly shop-keepers and shipping-owners, who exercise a certain influence upon the native population. The war in Europe had so raised anew the pride of country in each Italian, and filled him with such sanguine patriotic aspirations and hopes of a united Italy, that his heated fancy beheld in every incident of the war the most righteous struggle that ever was engaged in, and in the opposite party the most detestable and inhuman of opponents.

Among such an auditory as those in which such opinions were ventilated, there was no difficulty in finding adherents. The ignorance of the native population respecting all countries

on the other side of the Andes became conspicuously evident in the course of the discussion. Of Italy and her plains they had at least heard tell, since Peru maintains a pretty active trade with Genoa. If I am not mistaken, the great revolutionary leader and popular idol of Italy was once captain of a ship along the Peruvian coast, and left here many a friend and well-wisher to his cause and himself. Of Austria, on the other hand, there were simply dim rumours flitting about as of some shadowy land, or the vanished empire of the Incas. Singular to say, it was precisely the renowned Concordat made with the Papacy which had brought such discredit on Austrian policy among the Roman Catholic population. I dare not repeat here the strong language which was used, not alone in the journals but to myself personally, by educated Peruvians and foreigners settled here.

In fact, all the misery that Peru has suffered since its subjugation by the Spaniards, and its present drooping condition, is here universally ascribed to the overwhelming influence of Spanish monks and priests in secular affairs. It has not yet been forgotten that monks stood at the head of the Inquisition,—that for centuries the people groaned under their oppressive sway. Conscious of their own fate, and the condition to which the clerical weapons reduced the puerile half-civilized races which inhabit Mexico and Central America, the lively imagination of the Peruvians led to consequences resulting from such a state-policy far more disastrous than could possibly be the case among a free-souled people like the

Austrians. For it is the chief merit of European civilization, that every political measure threatening to impede the march of ideas by any process of fettering men's minds, only serves to evoke a more restless activity, as in our actual state of human culture enlightenment and science form far too formidable a bulwark for reaction to obtain any permanent success, or even to succeed in overleaping.

Among the excursions which I made during my stay in Peru, there were two of special interest,—a ride to the ruins of Cajamarquilla, and a visit to the Temple of the Sun at Pachacamac, the erection of which dates from a period antecedent to the dynasty of the Incas.

The ruins of Cajamarquilla are about nine English miles distant from the capital. Owing to the insecurity of life and property even in the region immediately around the capital, these ruins are but rarely visited. But very few strangers settled in Lima knew these ruins, and it required a long time ere I could procure the slightest information respecting them. My excellent host, Mr. Braun, who very soon perceived how much my heart was set on visiting these ancient Indian ruins, exerted himself to make up a party for me. It was a piece of real friendliness undertaken with the very kindest intentions, but unfortunately scientific objects do not usually admit of being mixed up with pleasure-parties, it being very difficult to unite the two. About twenty horsemen, chiefly English, had assembled to make the excursion. Among our company there were also a few ladies, whom the dif-

ficulties and dangers could not deter from joining us. As we had to take with us provisions for the entire party, a string of mules heavily laden with prog had been sent off early in the morning to the goal of our excursion. These preparations seemed to be by far the most important in the eyes of a majority of the cavalcade, after their arrival at the ruins themselves, an examination of which was evidently the last thing they had thought of when they bestrode their steeds in the morning.

The road to the ruins of Cajamarquilla is excessively fatiguing, rough, and rocky: nothing but climbing over rocky hills, upon which close to the very edge of the precipice is a faint Indian track, or crossing torrents, where the horse sinks to his crupper in the water, so that only a practised horseman can save himself from a thorough soaking.

Immediately on leaving the city begins a tract of desolate sterile stone-fields, in the midst of which one reaches what is known as the Hacienda de Pedrero, a lonely farm, where, it being as usual a fête-day of some Peruvian saint, a dozen field labourers had collected under the shadow of the verandah round the farm-house, blissfully occupied in doing nothing. No two of these were of the same breed; there were men of every variety of race and shade of colour; whites, Indians, Chinese, Negroes, Mulattoes, Mestizoes, Chinos, Sambos, Quadroons, &c. &c., and this specimen in little of the population of Peru would lead any observer to conjecture correctly as to the main reason of the low position held by the country

in the scale of nations. As in the Hacienda of San Pedrero, so throughout the country one encounters fifty coloured men of all shades for one full-blooded white. In Chile, on the other hand, one has to penetrate deep into the interior before one finds any traces of the Indian stock, while of negro population, (and this is the greatest advantage enjoyed by that Republic over Peru,) there is absolutely none. In the settled parts along the coast of Chile there are none but whites, and even the working classes are Spaniards, English, German, Italians, and North Americans. The preponderating white element in the population, their greater intelligence, energy, and perseverance, form the principal source of that intellectual and political activity which has placed Chile far in advance of the other Southern and Central-American Republics, and is opening a brilliant future to that State, far surpassing that of any of the neighbouring republics.

From the Hacienda de San Pedrero it is half an hour's ride to that of Guachipa and the Neveria of Don Pablo Sassio, where we engaged a guide, who accompanied us a couple of miles further to the goal of our excursion.

Cajamarquilla is an ancient Peruvian hamlet in the valley of and close to the river Rimac, which waters the whole district and makes it productive. The remains of the dwellings are built exclusively of sun-dried bricks, and the laying out of each single apartment differs little from the mode of constructing Indian huts at the present day. It must to all

appearance have been an extensive place once, as the ruins cover eight to ten acres. Considering the little space which the Indian of the present day requires for his household gods, it may be assumed that this was a place of from 30,000 to 40,000 inhabitants. I saw no buildings of very remarkable dimensions, nor indeed any one the laying out of which designated it as once intended for religious purposes. The ruins are for the most part, relics of simple mud-huts, all similarly laid out in single chambers, differing from each other mainly in the greater or less dimensions of the apartments. Nothing here told of the existence of any buildings intended for public meetings, temples for worship, sacrificial altars, &c., such as one meets with in the ruined cities of Central America, in Copan, Quiriguá, Petén, Palenque, and so forth. One perceives that each of these huts, like those inhabited by the Indians at the present day, consisted of two compartments, the entire superficial area being from 36 to 42 feet square. The larger of the two apartments is about 60 feet, the smaller from 12 to 18 feet in width and depth. Nowhere could we discern a trace of that special construction which is observable among the Indian races of the high lands of Guatemala, and is there usually employed for taking vapour-baths (Temaskal.)

To form any notion of the antiquity of these buildings is doubly difficult in a climate where it never rains and the temperature is the same throughout the year, and where consequently buildings are not exposed to the destructive alter-

nations of cold, damp, and scorching heat, as in other less favoured countries. Even earthquakes are here not so much to be dreaded as where houses are of brick or stone, since the Adoba possesses far more elasticity than intractable building material, and is therefore better able to withstand the repeated undulations of the earth's surface.

The site of the town, which lies in a long deep valley surrounded on all sides by hills of the most fantastic shape, rising to a height of from 8000 to 10,000 feet, is exceedingly grand. Unfortunately when we visited it, all the peaks and hills of the country around were naked, barren, and bleak-looking. But in winter after the first dews have fallen, those slopes and table-lands that now looked so desolate are covered with dense deep-green verdure, when they make a far more agreeable impression on the beholder.

Of trees I saw only a few kinds of bamboo and acacia, which, more spreading than lofty, were visible in the swampy ground along the edges of the torrents. Some of the hills around seem at first sight like artificial fortifications, but when we approach closer there is not the slightest indication of Cajamarquilla having ever been a fort or place of defence. To all appearance the spot, at the time of the Spaniards first coming to Peru, was inhabited by the Quichua Indians, who afterwards either abandoned voluntarily their peaceful abodes through dread of their pursuers, or were driven thence by violence. None of the present inhabitants of the vicinity, to whom I spoke, could give us any definite information as to

the ancient history of the ruins, and one hoary Indian, named Pablo Plata, who lives in the village of Guachipa, and remembers some wild traditions respecting Cajamarquilla, which he received by word of mouth from preceding generations, I unfortunately missed seeing owing to the shortness of my stay.

Quite close to the remains of the town, is at present a large Hacienda, with magnificent clover pasturages, fertilized by the river Rimac. It was at one of these green oases that our company sat down to a comfortable pic-nic, which spoke volumes for the preparations that had been made for creature comforts. No small portion of what had been brought with us was left on the field, to be gobbled up by the clouds of negroes that crowded round, glad of the opportunity of tasting something cooked in the European fashion, though they do not like them as well as the product of their own wretched native kettles. Thus, for example, our guide, a negro, preferred vegetables and *dulce* (sweets) to meat, and declared sherry and cognac offered him to be "too strong."

If not in ease and comfort, at any rate in scientific interest, I found my excursion to Cajamarquilla surpassed by that made to Pachacamác in the valley of Lurin, which I made in company with some friend, and in the course of which I stayed behind the rest of my party, in company with the flag-lieutenant of the since world-renowned frigate *Merrimac*.

My visit to Pachacamác was, however, in so far less interesting than that to Cajamarquilla, that the greater part of the

road, as far as Chorillos, was accomplished by railroad, the remainder of the way being over sand barrens, abhorred by both steed and rider.

Chorillos, about nine miles from Lima, and a favourite watering-place of the inhabitants of the capital, with salt-water baths and gaming-tables, lies in a small romantic cove, but is of rather difficult access, owing to the steep sand-hills which, 150 to 200 feet in height, bar all access from seaward. Accordingly our ride to Chorillos, like that from Callao to the capital, was performed under considerable difficulty and danger, whence it has not seldom resulted that visitors to the watering-place, who have made money at the tables of Chorillos, have on their homeward ride to Lima been eased of their winnings by some of their previous companions over the board of green cloth! At present one bowls thither over a well-made road, easily and without dread of being called on to "stand and deliver," since, even in Peru, people have not yet succeeded in amalgamating railroads and robbery.

The little place itself boasts of a few good dwelling-houses, and some 100 to 150 Ranchos of wood and *adobes*, or constructed of mud and reeds, in which delectable abodes the good folk from the capital are content to pass the hottest and most unhealthy months of the year (from January to May). These Ranchos, very unsightly without and exceedingly poorly furnished, are sometimes most habitable within doors, and fitted with delightful verandahs or open porches,

in which the free-and-easy occupants loll about in grass hammocks or rocking-chairs, fanned by the cool sea-breezes, in a state of dreamy *dolce-far-niente.* Altogether Chorillos is a very unpretending and altogether uncomfortable place, in which there is little room for elegancy or self-assertion, the President of the Republic himself occupying a wretched, dirty Rancho. Don Ramon passes most of his time in the gaming-room, where he is a much-desired and most welcome guest, on account of the large sums which he is in the habit of wagering.

On a lovely June morning, about 6.30 A. M., we rode out of Chorillos, and three hours later reached the ancient Pachacamác,* a Quichua village close to the sea-shore, with the temple of the Sun there existent at a period antecedent to the Incas, and which was afterwards dedicated by the Incas to the service of the invisible God. These ruins are much older than those of Cajamarquilla. They are partly of clay-tile, but by far the largest part consists of hewn stone, held together by mortar, the whole presenting, even in its ruined state, a lasting and massive aspect. Of the temple which once stood here, there is, however, no trace at present visible beyond mere indistinct traces of the foundation.

In the midst of a spacious Indian village there is seen a hill about 400 feet high, with artificial terraces in regular gradation, and surrounded by lofty walls, that look as though they had been battlemented. On this rising ground once stood the temple which the Yuncas had built in honour of

* Pachacamác, the invisible God, i. e. "he who created the earth out of nothing."

their chief god. Somewhat later, when this wild race had been subdued by the Incas, these consecrated the temple in honour of the Sun, flung out the idols of the Yuncas, and designed a number of royal virgins for its service. Pizarro, however, completed the work of destruction, when, with his fanatical followers, he penetrated, in 1534, into the valley of Lurin, hitherto the most populous and peacefully prosperous of the entire Peruvian coast. The villages were laid waste, the temple overthrown, and its virgin priestesses delivered over to the brutal soldiery, and afterwards put to death.

Quite close to the ruins, as they lie scattered along the coast, the island of Pachacamác, or Morosolar, rises from the bottom of the ocean, scarcely accessible owing to its steep, precipitous sides, and on which there is not a single architectural memorial of any sort to be found, as erroneously stated, or copied, by several authors.

From the summit of the hill the visitor finds a surprising landscape, stretching over the beautiful and fertile valley of Lurin; it is difficult to imagine a more vivid and delightful contrast than is presented by the greyish-brown, sandy, far-extending ruins, and the soft verdure of the surrounding plain, variegated with the hues of every description of tropical plant. The attention is further arrested by the singularity of the abounding vegetation beginning close to the sea, where sugar-cane and grass flourish in the most luxuriant superabundance, while scarcely a half-mile distant the landscape resumes the barren, sandy features, which extend for

miles inland. Not till the Lurin valley is reached does the magnificence of tropical vegetation again enliven the scene.

After a cursory examination of the locality, we passed the night at an adjoining *Hacienda*, a large sugar plantation and refinery, which employs 180 Chinese coolies. Each Chinese labourer receives rations of rice and vegetables, besides four dollars a month, and binds himself to stay eight years with his employer, to repay the latter's outlay for his voyage, &c. The speculator, however, who imports the coolies from the northern provinces of China receives a premium of 300 dollars for every coolie imported. The Chinese whom we saw at Lurin, as indeed all those we encountered throughout Peru, were very filthy and depressed-looking, but seemed in good health, and, on the whole, better off than in Brazil or the West Indies. We were told that two Chinese will not get through so much work as one negro. There are at present about 10,000 Chinese in Peru, who have been imported by speculators during the last ten years, to some of whom their deportation has been a vast benefit, since, after their eight years' service, they are free, and may and do begin to work zealously on their own account. In Peru, as in the Indies, Java, and indeed wherever they are employed, the Chinese cling close to each other, and mutually assist each other, should any of their number fall into poverty.

The following morning early we paid a second visit to the ruins of Pachacamác, and took with us from the Hacienda a number of negroes, with working implements, for the purpose

of digging up and examining the graves. At various points, especially close to the hill on which stands what probably was once a fort, we found a great number of skulls lying about. Most of those we picked up had been artificially compressed, though they did not all seem to have had the pressure applied at the same place, thus affording unmistakeable proof that artificial pressure had been resorted to here. Many of the skulls, though they had been interred for centuries, were still thickly covered with hair. There cannot be a doubt that most of those buried here belonged to the race which occupied this part of the country when the Spaniards first visited it, for after the occupation and the subsequent wholesale baptisms which the proselytizing monks performed upon the ignorant brown natives in droves, it is improbable that any of the Christianized Indians would thereafter be interred in unconsecrated earth.

The Peruvian Indians, as is well known, were accustomed to envelope their dead in coarse cloths, after which they were buried in basket or sack-shaped straw-plait work, certain objects and utensils being placed by their side, preference being given to those the deceased had most used in life. Thus, fish-nets, baskets, &c., were placed in the grave, and in the case of a chief, weapons, staffs with golden knobs, pots of wood or burnt earth, and so forth. The head usually reposes on a sort of pillow of grass or cotton. I brought away with me from Pachacamác about half a dozen of the most remarkably shaped of these skulls, as also some portions of mummified

corpses, which the negroes had disinterred in my presence. All these objects were in excellent preservation, about three or four feet under the surface, some in simple graves, others in longish sepulchres of hewn stone, such as we might imagine were occupied by the wealthier class of the community. It is usual to find several skeletons (probably members of the same family) in each separate grave. I also found layers of woven stuffs, some of very superior design and finish, interposed between various corpses.

While the negroes were engaged in further excavations, I once more ascended the hill on which the Temple of the Sun must once have stood, and which to this day is called by the neighbouring inhabitants "*Castillo del Sol.*" On the side next the sea, there are still visible a number of buttresses, which seem as though they had formed part of an older line of fortifications. There was nothing resembling a sacrificial altar, or to tell of the religious ceremonies that must once have been performed here. Here and there the material of the wall was still covered with a reddish tint, just as if it had been but recently painted. In several portions of the wall still standing, there were pieces of wood alternating with layers of mortar, now quite decayed, and affording unmistakeable evidence of the antiquity of the buildings. We also remarked in the walls of several of the Indian huts niche-shaped depressions, about $1\frac{1}{2}$ feet deep by $1\frac{1}{2}$ feet in length and width, the use of which has never been even plausibly conjectured. While the whole of the buildings of Cajamarquilla consisted of sun-dried tiles

and bricks, those of Pachacamác seem to have been almost entirely built of stone hewn into the shape of tiles. So much of the wall as still remains is very strong and solid. According to tradition the walls of ancient Pachacamác once stretched as far as Cuzco, 240 miles distant E. N. E.!

The proprietor of the sugar plantation in the Lurin valley told me that he himself, about ten years previous, had seen mummies disinterred in the neighbourhood of Pachacamác, in the mouths of which were gold ornaments, while various objects were buried with them, such as small idols of gold and silver, staffs with golden buttons, earthen jars and vessels filled with Chicha (the well-known favourite intoxicating drink of the Indians), and fruits, the Chicha and fruits having remained in a wonderful state of preservation.*

On our way back to Chorillos we passed the beautifully situate village of Susco, environed with neat country-houses, which was a favourite summer retreat of the inhabitants of Lima, before Chorillos reached its present development. At present Susco is dreary and forsaken-looking.

When I reached Lima on my return from this interesting

* In Cañete, an Indian village of 9000 inhabitants, 60 English miles from Lurin, there are also numerous Peruvian architectural memorials, as also an antique temple of idols, which have never been carefully examined. On my return to Lima, I was shown the mummy of a very young child, which Don Juan Quiros, deputy from the province of Cañete, had brought to the capital with him from his own home. The little corpse, quite mummified, lay in a beautiful, neatly-plaited little basket, and was swathed in layers of fine variegated cloth. On both sides lay toys of various kinds, attesting not alone the tenderness of the mother for her dead offspring, but also that a high degree of artistic taste and finish had been attained.

excursion, I had only a few days more left before I was to take steamer again *en route* to Panama, which I employed in riding about to examine all that was best worth seeing in the environs, and making a few parting calls.

One of the finest promenades in Lima is the *Alameda Nueva*, opened about two years previous, which lies on the road to Amancaes on the further bank of the Rimac, which divides the city into two unequal parts, of which, however, far the larger one, constituting indeed the city proper, lies on the left or southern bank. After the romantic descriptions I had read of the Rimac, I found myself woefully undeceived by the reality. Of the thundering rapids below the bridge, of which Castelnau gives us such a picturesque sketch, I found not a trace visible, the greater part of the river-bed, 150 to 200 feet wide, being quite dry, with a wretched little driblet of water trickling through it. The season of the year may, however, have contributed to this disenchanting prospect, and in August and September, when the melting snows and violent rain-storms of the neighbouring Cordilleras swell the brooks and rivers, they possibly impart a more imposing and lively aspect to the Rimac. The stone bridge over the river, which forms the communication with the suburb of San Lazaro, is a handsome structure, built in 1638—1640, from the designs of an Augustine monk, and cost nearly half a million dollars.

The *Alameda Nueva* consists of a long, wide lane, with pretty garden nurseries and flower-beds on either side, interspersed with tasteful marble statues life-size, the whole enclosed in an

elegant iron railing richly ornamented. In the winter season, more particularly (June to September), this beautiful promenade is in great request, when, after a few heavy falls of dew, the hills and valleys of the environs are covered with verdure of the most delicate shades, and the residents of the capital wander through the lovely glades of Amancaes, which is so overrun with the yellow blossoms of the Amaryllis (*Ismene Hamancaes* of Herbert), that this fine plant has given its name to the whole valley. On such occasions quite a colony of booths is extemporized, where eatables and drinkables are consumed, and giants and dwarfs, panoramas and art-saloons, are thronged with visitors, while ballad-singers, musicians, rope-dancers, mountebanks, jugglers, gamblers, and thieves, are never weary of plying their various trades, to the lightening of the purses of the pleasure-seeking crowds.

Of public amusements and places of resort there are but few in Lima, and these not of a very refined description. The theatre is an old and downright ugly building, where Spanish comedians play indifferent pieces. An Italian operatic company proved a failure owing to want of subscribers, even the highest talent barely succeeding in gaining sufficient to charter a ship to carry the *troupe* back to Europe. The sole amusement, which never fails to collect a delighted multitude, is a bull-fight. These come off at intervals during the summer in the Plaza del Acho, in an uncovered amphitheatre specially built for the purpose, and constructed of sun-dried brick. On these days all Lima is in a state of excitement, and an incalculable

crowd of curious sight-seers of both sexes are hastening through the Alameda Nueva to the arena, there to gloat over the bloody scene. Fully 12,000 to 15,000 human beings throng into the confined area; each hastily deposits his half dollar (2*s.*) of entrance-money, so as to get the chance of a better seat. One would think it must be to a splendid soul-elevating drama that they are flocking to listen to, whereas it is but the torture of a wretched herbivore that excites their depraved curiosity. The reader will excuse me for not reiterating the loathsome details of an often-told spectacle.

It is a fact of considerable historic interest that bull-fights are now confined to the Spaniards and to their coloured descendants, in the various regions of the globe whither her dominion has extended, and it seems but a fit pendent, that the laws of the same nation should, in the latter half of the nineteenth century, condemn to the galleys Roman Catholics who venture to embrace Protestantism.

We wish here to add one single remark of our own on a feature of the entertainment which we have not seen mentioned elsewhere, viz. what becomes of the flesh of the animals thus killed. It is forthwith cut up in quarters quite close to the arena, and sold at a reduced price to the populace, although it is a well-known physiological fact, that the meat of any animal killed in a state of rabid agony cannot be eaten without prejudice to the health. The negroes, however, erroneously maintain that meat thus killed is far more tender than that of cattle slaughtered in the ordinary

mode, and the Government of Republican Peru finds it best to leave each to decide the physiology of the question by his own digestive powers.

Of the state of society in Lima I have little to say. A stranger finds it difficult to obtain a footing among the better families, especially if his stay be as limited as mine necessarily was. The high-pressure existence of the capital has of late years obliterated much of its former originality and poetry. He who saw Lima twenty years ago would hardly recognize it now-a-days. The "Saya" and the "Manto," those singular but in Lima once indispensable articles of apparel of the Limañas, which enabled them like masks to attend church or market, to join processions, in short, never left their face in the street or at the promenade, have entirely disappeared, and with them have necessarily gone many other peculiar habits and customs. Formerly no lady durst venture into the street without a "Saya" or "Manto;" now, on the contrary, she would run the risk of being insulted, or at least stared at, should she appear in public in this peculiar mask-like disguise. The ancient usages peculiar to the country must give way to French manners; the Saya, the close-fitting, usually black or cinnamon-coloured upper garment, which once was the customary attire, and consequently rendered a more careful toilette unnecessary, has made way for the voluminous crinolined silk dress, while the Manto, that heavy veil of a thick black silken material, which was thrown over the back, shoulders,

and head, and drawn so close that there was only a small triangular space left through which peeped one eye, has been displaced by the long black head-dress which the Spanish women are accustomed to wear.

The ladies of Lima are usually of elegant, slight, graceful appearance, their chief attractions being brilliant complexion, large dark gleaming eyes, dazzling white teeth, rich black hair, and very neat little feet. They greatly reminded me of the Havana ladies, with whom they have much in common so far as regards the passion for personal adornment, while in figure and intelligent expression of face both lag far behind the ladies of Chile.

The gentlemen of Lima, by which term I allude chiefly to the white creoles or pure descendants of the Spaniards, who constitute about one-third of the population,* do not leave that impression of a splendid future resulting from a prosperous development of the resources of the country, which might be reasonably expected if there were more intellectual movement, and more industrial and commercial activity apparent among their number. The state of affairs in Peru since its separation from Spain in 1822, the constant squabbles and civil wars, as also the fact that a mere mestizo, like Ramon Castilla, devoid of intellectual or moral pre-eminence,

* According to the "Estadistica general de Lima" (1858) of M. Fuentes, Lima has a population of 94,195, all told; according to the "Anuario Nacional" of A. Leubel for 1861, only 85,116 souls, who inhabit a surface of 6523·597 square Varas (Spanish). The entire population of Peru can hardly exceed 1,900,000, but a reliable census has never yet been made.

should have succeeded in getting himself declared President for life of the Republic,* are the best proofs of the political and moral degradation of the Republic of Peru. All the splendid territories from Peru to Mexico have, after three centuries of Spanish rule, sunk into a state of demoralization and degeneracy, owing to the listless, labour-hating, sluggish mestizo races that inhabit it, such as only the immigration of one of the hardy northern races can ever adequately remedy. In a previous visit to Central America, I have wandered through its rich scenery, clad in the hues of perpetual summer, and smiling in exuberance of fertility, and everywhere the same impression was made upon me. Almost the only effect this wealth of nature seems to exercise upon the Indian or negro mestizo is to incapacitate him from mastering by any effort of his own the lethargy that preys upon him. Where a few rare exceptions occur, as, for instance, in Costa Rica,

* Once during my stay in Lima I had an opportunity of conversing with Don Ramon. He had come up from his country-seat, or rather from the roulette-table of Chorillos, to the capital, and was courteous enough to accord me a reception at his house. After passing a couple of sentinels, I was ushered through a large bare room into a small ill-lighted apartment on the ground-floor, when I found myself suddenly face to face with the President of the Peruvian Republic. I was presented by a friend settled in Lima. The General is a mestizo with a strongly-marked brown Indian visage, projecting cheek bones, and an arched nose, wiry grey hair kept close cropped, and energetic, but withal coarse features. He is so far entitled to gratitude, that during the few years he has swayed the destinies of the Republic, he has maintained internal tranquillity. But there still remains the saddening feeling, borne out by the actual state of matters, that a territory over which Spanish grandees and viceroys once held sway, is at present ruled by an Indian half-breed, who can scarcely read and write. In manners and general appearance, Don Ramon Castilla strongly reminded me of his dusky confrère, General Rafael Carrera, President of Guatemala, with whose despotic tendencies he may be said fully to sympathize.

in which a sounder policy is preserved, it is invariably found that they are of purer Spanish descent than their sister republics in tropical South America.*

Owing to their political organization, these various states can scarcely fail to be powerfully affected by the impulses of our time. They have no other prospect than that of becoming either an integral portion of the immense North American Federation, or of once more being consolidated into a monarchy under the sceptre of some scion of a European royal family. In all probability, whether they be North Americans, or English, or Germans, they will always be children of some of a more powerful race, who must ultimately subvert the races of the Southern type, awaken a new spirit of energy, and so carry out that which the lazy mixed races of the present time have neither the power nor the inclination to effect. An immigration of skilled Northerners can alone raise these countries politically and commercially, develope their natural resources, and restore them to the grade of civilized states.

One of the most important as well as useful plants of Peru, and with samples of which I provided myself on leaving Peru, for the purpose of future analysis, is the Coca (*Erythroxylon Coca*), the leaves of which mixed with chalk or ashes of plants, form so important an article of diet as well as a masticatory among some Indian races of Peru and Bolivia.

* Thus too it is the predominance of the pure Spanish type and the extent of foreign immigration, which render the future of Chile so hopeful.

Before I left Europe one of our most celebrated German pharmacologists, M. Wöhler of Göttingen, expressed to me his wish to procure a considerable quantity of coca leaves, to enable him to analyze more completely than had as yet been done the chemical constituents of this remarkable plant, and I therefore made it a duty to take measures for procuring the requisite supply. Although the wonderful stimulant properties of the coca had for more than half a century been known to European travellers, the leaves of the plant, which flourishes best on the eastern slopes of the Cordilleras of Peru and Bolivia, at an elevation of about 8000 feet, and a temperature of from 64°.4 to 68° Fahr., have hitherto only reached Europe in very small quantities, having in fact been carried home simply as curiosities. It was reserved for one of the *Novara* expedition to bring over as much as 60 lbs. weight for the purpose of investigation of its properties by German men of science. Half of this quantity I took to Europe among my own effects; the remainder was forwarded somewhat later, through the kindness of two German gentlemen resident in Lima, Messrs. C. Eggert and N. Linnich.

So many, and in the main correct, accounts * have been published by travellers of the coca plant, its culture, its effect

* Vide E. Pöppig, Travels in Chile, Peru, and down the Amazon, vol. ii. p. 248.—Von Tschudi, Sketches of Peruvian Travel, vol. ii. p. 290.—Weddell, Travels in Northern Bolivia in 1853, p. 514.—Von Bibra, Narcotics and their Influence on Man.—History of the Expedition of M. Castelnau in the Central Territories of South America. Paris, 1850, vol. iii. p. 349.—Dr. Paul Montegazza, "Researches into the Hygienic and Medicinal Properties of Coca. Annali de Medicina. March, 1859."

upon the system, and the marvels that have been achieved by its use, that I may well be excused from dwelling at length upon the habit which prevails among the Indians of chewing coca, or on its importance as a chief article of subsistence for several millions of our fellow-creatures. I may, however, mention certain instances which came within my own personal knowledge, as also a few statistical data relating to the annual consumption of coca in Peru and Bolivia, and the economical importance of this cultivation.

A Scotchman named Campbell, who was settled as a merchant at Tacna in Bolivia, and with whom I travelled to Europe from Lima, informed me that a few years before, being engaged upon matters of urgent business, he had performed in one day a distance of 90 English miles on mule-back, and throughout that long distance had been accompanied by an Aymara Indian, who kept up easily with the mule, without other refreshment than a few grains of roasted maize and coca leaves, which, mingled with undissolved chalk, he chewed incessantly. On reaching the station where he was to pass the night, Mr. Campbell, though mounted on an excellent animal, found himself greatly fatigued; the guide, on the other hand, *after he had stood on his head for a few minutes*,* and had drank a glass of brandy, set off without further delay on his homeward journey!!

* This custom of the Aymara Indians, not less universal than extraordinary, of standing on their heads after long and fatiguing marches, seems to be the result of an instinct which teaches them how best to mitigate the severe pressure of the blood.

In April, 1859, Mr. Campbell despatched a native from La Paz to Tacna, a distance of 249 English miles, which the Indian accomplished in four days. He rested one day at Tacna, and set off the following morning on his return journey, in the course of which he had to cross a pass 13,000 feet in height. It would seem that throughout the whole of this immense journey on foot, he followed the Indian custom of taking no other sustenance than a little roasted maize and coca leaves, which he carried in a little pouch at his side, and chewed from time to time.*

Like other experienced travellers, Mr. Campbell, who has lived over 14 years in Bolivia, is of opinion that a moderate use of coca exercises no prejudicial influence upon the general health, but simply tends to make the Indian races of the higher regions of the Andes more capable of continued laborious work. Many coca-chewers attain a great age, and Mr. Campbell knew one such, who had taken part in the insurrection of Tupac-Amaru in 1781, and at the time of my visit, 1859, was still in full possession of all his faculties. In short, as in the case of opium and wine, it would seem that it is only the abuse of coca that is followed by evil consequences.

The coca is less cultivated in Peru than in Bolivia, and the leaves are not in such request among the Quichua as

* The mail goes four times a month from La Paz to Tacna, and usually weighs 25 lbs., which the courier carries on his back and delivers within some five or six days, without other nourishment than that already specified!

among the Aymara Indians.* As the Government of Bolivia draws a very handsome revenue from coca cultivation, a tax of five reals, about one shilling, being levied on every *cesto*, or about 25 lbs. English, there is a better opportunity of getting at the correct amount of the entire production than in Peru, where the plant is grown free of duty. The coca tax realizes in all in Bolivia 300,000 *pesos* or dollars (about £75,000), so that the entire annual product is about 480,000 *cestos* or 1,200,000 lbs. The *cesto* is worth at La Paz from 7 to 9 *pesos*, but when employed in large quantities for export, it cost about 10 dollars, placed on board ship. Altogether the coca crop of Bolivia may reasonably be estimated at rather less than 700,000 *cestos*, equal to about 78,000 tons.

The analysis to which the coca leaves I brought home with me were subjected at Göttingen, was attended by most important results, though the experiments are far from being completed. It was reserved for one of the assistants of the chemical laboratory, named Albert Niemann, to discover

* The Aymara Indian rarely uses animal food, as to do so he would require to kill one of his beloved Llamas. His chief food consists of roasted *Chuño*, a small bitter species of potato, which flourishes only on the barren, rugged plateau of the Andes inhabited by the Aymara, where neither the common potato nor the maize continue to grow; even barley, which the Spaniards introduced, ceases to thrive. Their only other food is a species of moss, which grows in the swamps, and is called by the natives "*Lanta*." Under such alimentary conditions, it is readily intelligible why the Aymara have a predilection for coca balls (*acullica*), which (as sailors and others do with us, with tobacco) they keep continually rolling about in their mouths, and which, as soon as the whole of the juice has been sucked out, is thrown away and replaced by a fresh "quid." The juice of the green leaves diluted with oceans of saliva is usually swallowed. An Indian chews on the average an ounce to an ounce and a half per diem, but on feast-days double that quantity.

in the leaves a peculiar crystallized organic base, to which, following the usual custom in such cases, the name Cocani has been given.*

The lamented death of Dr. Albert Niemann in the flower of his youth, and in the midst of his promising labours, necessarily interrupted for a time the investigations into the nature and properties of cocani. M. Wöhler, however, in his capacity of Director of the Chemical Laboratory of the University, was so good as to assign to another able assistant, Mr. W. Lossen, the task of taking up the analysis at the point where its gifted discoverer had left it, when it was found that, when heated in chlorine, the cocani underwent a singular and

* Cocani is precipitated in colourless inodorous prismatic crystals. It is with difficulty soluble in water, but melts readily in alcohol, and with still more facility in ether. When dissolved in alcohol, the solution becomes a strong alkaline re-agent, and has a peculiar slightly bitter taste. When brought in contact with the nerves of the tongue, it possesses the singular property of deadening sensation after a few seconds have elapsed, in the part to which it has been applied, which for a time becomes almost void of feeling. It fuses at a temperature of 208°.4 Fahr., and in cooling resumes its former prismatic crystalline form. When heated beyond this temperature, it changes to a reddish hue, and volatilizes with a strong ammoniacal odour. Only a small portion seems to get liberated by the destructive process. When heated on a platinum disc, it burns away with a bright flame, leaving no residuum. Cocani completely neutralizes acids, although most of the resulting salts seem to crystallize with difficulty, and to remain for a considerable time in an amorphous state. The resultant chloride seemed the most readily formed as well as delicately shaped of the crystals. Cocani exposed in chlorine is followed by such a development of heat that the former is fused. (Compare "Cocani, an Organic Base in the Coca," letter of Professor F. Wöhler to W. Haidinger, acting Fellow of the Imperial Academy of Sciences, presented at the meeting of the Class of Mathematics and Physical Science, 8th March, 1860. See also "On a New Organic Base in the Coca-leaves," Inaugural dissertation on attaining the degree of Doctor of Philosophy at Göttingen, by Albert Niemann of Goslar. Printed at the Göttingen Press, 1860.)

astonishing metamorphosis, being in fact resolved into Benzoic acid and a new organic base, for which M. Wöhler proposes the name of Ecgonin (from Εκγονος, an off-shoot). Further researches with the coca leaves lead to the discovery of a second organic base, which, it would appear, is contained in its primitive form in the coca, the composition of which will be treated of in a forthcoming paper by Mr. Lossen. This base is in a liquid form, for which the provisional name hygrin (from ὑγρος, fluid) has been adopted.*

Hitherto the experiments made to determine the physiological properties of cocani have been less important in their results, as it is only found in small quantities in the coca leaf, and an adequate quantity can only be obtained with great trouble and difficulty.† Consequently it is as yet impossible to decide the questions, whether one of these bases is stronger than the other, as also to which of the two are to be ascribed

* According to Wöhler, this fluid substance admits of being distilled even along with water; its odour strongly recalls Trimethylamin; it is a strong alkaline reagent, but is not bitter to the taste, and forms a white cloud when acids are poured upon it. Its chloride crystallizes readily, but is very volatile. With chloride of platina it forms a flocculent uncrystallized precipitate, which decomposes on the liquid being heated. With chloride of quicksilver, it assumes a dim milky appearance, which is caused by the formation of a substance resembling drops of oil. Hygrin is not poisonous; a few drops given to a rabbit were followed by no perceptible symptoms.

† As, judging by the experiments hitherto made, cocani seems to consist of two atoms in juxta-position, there is reason to conjecture that it is destined to be the source of a large number of products of transformation. It is highly probable, as Wöhler has remarked, that cocani may yet be *artificially* made by a mixture of hygrin with Benzoic acid, or rather with one of the substances forming part of the Benzoyle group.

the peculiar properties of the plant. Singular enough, the various experiments with an effusion of the coca leaves had not the least result, while it is well known that the use of this kind of tea in the Cordilleras wonderfully stimulates the breathing powers of the traveller, besides satisfying his appetite.* It would also appear that the coca leaves lose part of their virtue in transit, and that their most intense activity is only developed in their native regions. If, however, the ultimate results of the experiments of Mr. Lossen, instituted with as much sagacity as zeal, should incontestably prove the value and utility of the plant for pharmaceutical purposes, as well as in all cases where the human strength is exposed to unwonted strains upon its energies, the means will surely and easily be found for extracting *on the spot* the active principles of coca, as is being at present done by industrious Yankees in Ecuador, with the Cinchona or China bark.

When the *Novara* was leaving Batavia, I cherished the hope that our stay in South America would be sufficiently prolonged to admit of my making an excursion to the Cinchona forests, so as to enable me to speak authoritatively and from personal knowledge upon certain questions discussed at Lembang with Dr. Junghuhn,† which had hitherto been left

* See Von Tschudi *ut suprà*, vol. ii. 309.

† I append here the most important points on which information is sought respecting the climatic and other conditions of the various Cinchona species as cultivated in South America, concerning which Dr. Junghuhn needed more correct information, and can but express the hope, that, should curiosity or destiny lead the

unsettled or altogether unexamined, and which were of such deep import to the attempts being made in Java to cultivate

steps of any one of my more earnest readers to Peru, he may succeed by his own observation in solving these questions, my inability to aid more effectively in which has been to me a source of deep mortification. The learned naturalist of Java furnished me with the following particulars :—

"What it behoves us especially to ascertain, respecting which Hasakael has observed nothing, and Weddell furnishes no accurate information, is comprised in the following questions :

1. What are the highest and lowest limits of the *Cinchona Calisaya*, or at all events, what is the altitude of the region in which it most abounds ?
2. What is the unvarying warmth of the soil, as observed at a depth of 5 feet below the surface ?
3. On what soil does it grow most abundantly and luxuriantly ? Does it affect rich black mould, in moist forcing soils, or rather dry, stony, barren soils ? Does it grow on steep acclivities, or does it seem to prefer gentle slopes or level ground ? Can specimens of the soil be procured ? What is the description of the rock formation, trachytic, granitic, or gneiss, or are slate or sandstone the characteristic formations ?
4. What are the general meteorological conditions, and what is the annual amount of rain-fall ? For how many and during what months does it rain, and during what period of the day are the showers heaviest ? Does it rain for months at a time, and for how many, and during what months ? Or does it not rain at all, in which case is its place supplied by regular afternoon storms ? How many days of rain are there in the rainy season of that particular region of the tropical zone ? Are the nights and forenoons, as in Java, usually clear until noon ? Is it known whether observations have ever been made by the Spanish Creoles as to the amount and duration of the rain-fall ? A correct knowledge of the amount of moisture and rain-fall of the Calisaya district is of special importance to all engaged in the cultivation of that plant. Further, frequent observations must be made with the psychrometer in the morning before sunrise, between nine and ten o'clock, at the hour of maximum of temperature, and in the evening, in the forest and in the open ground, that these may afterwards be compared with mine in Java.
5. Does the Calisaya prefer the deepest shadows of the forest, does it grow there quite apart from other trees, or is it more frequently found in the open spaces where it is warmed by the sun's rays, such places being usually rather clear of trees ? Does it grow solitary, or is it found in groups or clusters, and are its special peculiarities in this respect observable in every forest ? Is it observed to

the Cinchona. Circumstances, however, had conspired to render this impracticable. Instead of the entire expedition, as originally projected, visiting that classic region, it was re-

be more numerous towards the edge of the forest, and does it evince a tendency to extend thence over the grass, the drift, the plateaux, &c., and what alterations do these make in its habits?

6. Information is wanted as to the month in which the Calisaya blossoms, and that in which the fruit ripens, as also what length of time usually elapses between the first appearance of the buds and the shedding of the *corolla*, and from the shedding of the *corolla* to the bursting, i. e. the complete maturity of the capsules. It would seem that in Java it takes a much longer time, as also that it blossoms at an entirely different season from that in which it blossoms in its native regions.
7. Much anxiety is felt as to whether it is possible to ascertain with accuracy how many years old, as also what are the usual height and the diameter (at the base of the trunk) of a Calisaya tree, when it first begins to blossom, and whether these first blossoms are developed into ripe fruit, with seeds capable of fertilization.
8. How high, how thick, and how old are—
   a. The youngest and smallest, and
   b. The largest and oldest,

   Calisaya trees, which are now felled for their bark in South America? What description of bark is the most prized, that from the young and slender, or that from the larger and older trees? Also whether the bark of a very young tree, e. g. four years old, contain thus early the active principle, genuine?
9. As, judging by appearances, it has been rightly assumed that the bark of any given description of Cinchona is found to be more abundantly provided with alkaloid, especially quinine, the greater the elevation above the sea, and becomes impoverished in these respects in proportion as a lower level and a warmer climate are reached, it is desirable that special observations should be made for the elucidation of these particulars.
10. It is desirable information should be got from the China-bark collectors (Cascarilleros) of Peru, as to the natural foes of the Cinchona plant, especially C. Calisaya, and it appears likewise important to ascertain whether the Calisaya is there also liable to be injured and bored into by mites and other noxious insects.
11. It is highly desirable that all the above recommended observations made respecting Cinchona Calisaya, may also be applied to *all other* species of Cinchona that may occur in South America, of which those ranking next in interest and importance to us in Java, and which have been planted here, are C. *Conda-*

served to myself, a solitary individual, to tread the scenes, where Humboldt once collected the first valuable contributions to science, and even then my time was so limited that my attention had to be confined to the capital of Peru, and the neighbouring country. Under these circumstances such a project as a regular scientific excursion deep into the heart of the Cinchona forests was entirely out of the question. I did not fail, however, to translate into Spanish and English, the disputed points which Dr. Junghuhn had requested me to ascertain for him, so that I might obtain such information upon these interesting questions from such of the friends I made in Peru or Chile as seemed likely, either in their own persons or by the opportunities for natural studies that might happen to characterize their place of residence, to

minea, var. lucumæfolia, laurifolia, lanceolata, as also C. *cordifolia,* C. *ovata,* and *var. erythroderma.*

12. Is the pure red China bark actually obtained from the C. *ovata, var. erythroderma* of Weddell, as would appear from an article by Howard in "the Pharmaceutical Journal for October, 1856?" The leaves of that variety have the most resemblance to those of the three young trees brought over, which we now possess in Java, and which I have spoken of as *Cinchona cordifolia.*

13. The experiments in acclimatization of the above-named species in Java, especially in Western Java, which, it must be admitted, has a very much more moist, rainy climate than Peru, and still more so than Southern Bolivia, where the Calisaya chiefly grows, have already undergone several phases, and it has successfully struggled with numerous obstacles, some natural, others the result of failures of the earliest cultivators. The species named C. *Condaminea, var. lucumæfolia,* has shown itself more susceptible of being acclimatized than the C. *Calisaya,* and at present (May, 1858) promises to produce from 50,000 to 70,000 ripe fruit, within a few weeks, all fit for reproduction. Apparently the climate and other physical conditions of the locality in Java, where the cultivation has been carried on, have corresponded with those natural conditions which enable this plant to grow so abundantly in its native soil of Peru."

advance our knowledge of the Cinchona tree and its cultivation. My different efforts to obtain reliable information on the cultivation of the China bark tree in its mother country were especially promoted by my having met, while at Lima, with Mr. Campbell, who, during the many years he has been settled at Tacna, has paid especial attention to the China bark trade. For the chief export of this important medicament is in the hands of the Bolivians, and not of the Peruvians, as the uninitiated might imagine from the name it is usually known by in commerce, viz. Peruvian bark.*

The most important facts which I am here enabled to dwell upon relate to the correction of a wide-spread misconception, that owing to the thirst for plunder and the wilful neglect of the China tree in its own native regions, the supply of the valuable drug obtained from its bark, the well-known Countess'† or Jesuit bark, which to the practical physician is of

* The name dates from the time when what is now Bolivia (in the forest of which the China tree chiefly grows) formed an integral portion of Peru, and was in fact called Upper Peru, whereas from that which is now called Peru, hardly any bark is exported, while that found in New Granada and Ecuador, whence it is exported to Spain under the name of Pitaya, is a species of very inferior quality for medicinal purposes.

† The name, Countess' powder, which was given to the drug owing to its use by a certain Countess Chinchon (wife of a Peruvian viceroy), was afterwards altered to Cardinal's or Jesuit's powder, in consequence of the Procurator-general of the order of Jesus, Cardinal de Lugo, having, during his passage through France, everywhere made known the virtues of the drug, and recommended it to the particular attention of Cardinal Mazarin, as the brethren of the order had begun to drive quite a lucrative trade in South American China bark, which they had carried on by their missionaries. V. Humboldt's "*Ansichten der Natur*," third edition, 1849, vol. ii. p. 372.

scarcely less importance than the potato to the labouring man, is daily diminishing. The Calisaya region (i. e. the limits within which the C. Calisaya, the species that furnishes the most valuable bark, is found in its finest and most abundant state) extends from about one degree north of Lake Titicaca, or from 14° 30′ to 20° S. In the forests of Cochabamba, between which place and La Paz is the principal district of the China tree, the tree is more frequently found than in those running parallel on either side with La Paz, in which it is usually met with at such a distance from the capital that it becomes valueless, owing to the cost of transport, which is as high as 17 dollars per 100 lbs. The more southerly forests are still quite virgin, and have never re-echoed the blows of the Cascarilleros' axe. The largest quantity is exported from Tacna through the port of Arica, only a small portion being smuggled northwards from Lake Titicaca, for shipment viâ Port d'Islay. According to statistics, from 8000 to 10,000 cwt. of bark may be thus exported for any lapse of time, without the slightest danger of the tree getting exterminated. Since 1845 the exportation of bark from Bolivia has been a Government monopoly, which has farmed out the privilege to a private company, that used to pay a certain annual premium based on an export of 4000 cwt. The company paid the Cascarilleros or other persons who collected the bark, 25 dollars to 30 dollars for every hundredweight of Calisaya delivered in La Paz, the capital of Bolivia. The enterprise, however, proved only partially successful, since

speculation, avarice, and the continual political troubles and alterations of the Government, have each and all proved sore enemies to the peaceful development of the industry of the country. Each new President had only one thought, viz. how to make the largest profit by seizing on the natural wealth of the country, and only sought to increase the export of the bark for the sake of the monopoly. In 1850 a native commercial house in La Paz paid the bark-gatherers 60 pesos for every 100 lbs., besides a duty to Government of 25 pesos additional, at the same time paying on an estimated export of 7000 cwt. The exorbitant wage thus granted to the Cascarilleros resulted in an enormous quantity of Calisaya being brought to La Paz from all parts of Bolivia. In order to preserve the public tranquillity, and not glut the market, the Bolivian Government now prohibited entirely the cutting or collecting of bark. Within eighteen months about 1400 tons of bark were brought in, and this gave the monopolists a perfect dread lest they should have to declare themselves bankrupt, and it was indeed only through the intervention of Government that they escaped. The latter took the entire stock on their own hands, paid the speculators with Treasury bonds, redeemable within a given number of years, and made a fresh contract with a native firm, which stipulated that the price at La Paz should be 65 dollars per 100 lbs., without further export duty.

As soon as the stock in hand was exhausted, the prohibition against cutting Calisaya had of course to be rescinded,

and in the interim the most decided steps were taken to check the superfluous, indeed dangerous, zeal of the Cascarilleros in the collection of the bark.

While I was in Java chemical experiments had begun to be made with the bark of the young China trees, and from the fact that the valuable alkaloid was not found in these, it was hastily inferred that the bark of the trees grown in their adopted country had, owing to the change effected in climatic and other conditions, been deprived of the principle that made them most valuable in their native land. But researches made in South America have satisfied me, that even in the indigenous forests of Cinchona, the active principle quinine is only found in the bark of older trees, and that its quantity is perceptibly affected by the age of the tree, the finest quinine being obtained in largest quantities from trees upwards of fifty years old. To ignorance of this peculiarity must also be attributed in all probability the fact that, at the period of the Spanish rule, the China collectors or hunters (*Cazadores de Quina*) used to fell annually 800 or 900 young trees of from four to seven years old, to get at the 110 cwts. of fever-bark, which, intended exclusively for the use of the royal house, were shipped every year from Païta, and thence round the Horn to Cadiz.*

So, too, with respect to the quantities annually exported at present from Bolivia and Peru, and used in European stores, there remain serious errors to correct, prevalent even among

* See Humboldt's Ansichten der Natur. Third edition. 1849. Vol. ii. p. 319.

scientific circles. According to the latest estimates (which take cognizance of seven inferior sorts), there have been exported, between 1830 and 1860, not more than 10,000 tons, while of Calisaya, the specially valuable red bark (*Cascarilla roja*), not above 120,000 cwt. have been exported in all during the same period. While the annual export thus dwindles in dimensions from what had generally been supposed, there has lately been discovered in large quantities, in the forests between Tarija, Cochabamba, and La Paz, a species of Cinchona, whose bark is said to possess very much the same properties as the Calisaya. The curate of Tarija has offered for sale 3000 cwt. of this valuable bark (called by the Indians Sucupira). The position of the forests in which this species of Cinchona is found is so favourable for exportation, that the cost of transport from Tarija to Iquique, the nearest port, would only amount to from 8 to 10 dollars per centner.

The departure of the mail steamer from Callao de Lima was fixed for the afternoon of 12th June, when several of my friends were so kind as to accompany me on board. In Callao I paid a short visit to H.M.S. *Ganges*, and the U. S. frigate *Merrimac* (destined in less than three years to acquire a mournful renown in the horrors of civil war, as also imperishable celebrity as the pioneer of iron navies), one of the finest and most powerful screw-ships of the North American navy, armed at that time with 32 cannon, and of 960-horse power. I had had the pleasure of becoming acquainted with the officers of both ships, partly in Valparaiso, partly in Lima.

On board the *Ganges* I experienced a not less cordial and kind reception, and Admiral Baines, as commander-in-chief of the British fleet in the Pacific, did me the honour of granting me an official pass to all captains of British ships, setting forth my scientific pursuits, and recommending me to their particular attention.

On the morning of the 14th June, the good steamer *Valparaiso*, commanded by that courteous model of a British sailor, Captain Bloomfield, reached Huanchoco, the principal harbour of Truxillo, which is only six miles distant, and was once the capital of the northern portion of the empire of the Incas. The export of silver, wool, and cochineal from this port is pretty considerable. Here came on board a Scotchman named Blackwood, who for some years past had been cultivating cochineal in Truxillo, but was now, as he confessed, unable any longer to compete in its production with other countries, in consequence of the price of labour being so high, and the uncertain state of labour-supply. Mr. Blackwood intended proceeding *viâ* California to the East Indies, where he hoped to light upon a more suitable field for cochineal-growing, the cost of labour there being still low, and there existing a constantly-increasing demand for that substance.*

* Señor Emilio Escobar of Lima sent me a small flask of this hitherto little-known vegetable stuff, which gives very much the same dye as the cochineal insect, and is found in great abundance throughout Peru. I have added this bottle of dye, which at all events merits more minute investigation, to the other collections of the *Novara* Expedition.

On the 15th June we anchored in the roads of San José de Lambajique in the department of Chola. The position of this village is so unsuitable, that it is only possible to effect a landing by means of what are called *Balsas* (rafts with sails), consisting of huge thick trunks of trees bound together. One of these curious contrivances conveyed on shore in safety 76 passengers at once, together with all their miscellaneous effects!

Fifteen miles north of Lambajique lies the Indian village of Iting (Repose), with 5000 inhabitants, whose language is totally different from the Quichua dialect, usually spoken in the province. One Peruvian on his return from his travels even went so far as to say that the idiom of the Iting Indians strongly resembled that of the Chinese! In Monsefú, not quite two miles from Iting, lives an Indian population which speaks nothing but Spanish, and consequently can neither understand nor be understood by its neighbours! This singular state of things almost entitles us to conjecture that the Spanish conquerors have adopted here the same tactics as those they put in practice in Central America, where they repeatedly were at the pains to introduce among the subjugated tribes, colonies of another race frequently hostile to the aborigines, in order by difference of customs and language to render any united action against the common enemy almost impossible. I have myself frequently observed in the Central American State of San Salvadore, that, for instance, the Tlascaltecas, who speak the language of Montezuma, had been settled in the midst

of foreign races. Such colonizations have almost invariably been effected for political purposes, and were compulsory, instead of being undertaken voluntarily.

On 16th June we anchored in the beautiful and sheltered harbour of Payta. The little town itself has about 4000 inhabitants, who carry on a pretty brisk trade with the interior and along the coast. The principal article of export is hides, especially goat-skins, chinchilla fur (*Criomys Chinchilla*), cotton, fruit, oil, herb-archel (*Roccella tinctoria*—used occasionally as a medicine, but more commonly as a dye,—the well-known litmus, used for chemical test papers, being prepared from it), and straw hats. Forty-five miles distant from Payta, in a beautiful and fertile neighbourhood, lies the town of Piura with 10,000 inhabitants, which carries on an extensive trade in fruit and vegetables along the coast, and indeed supplies Lima with its excellent produce.

Payta harbour is visited annually by from fifty to sixty whalers, who take in fresh provisions here, do their repairs, and give their crews a little repose after long and heavy labours. The climate is very healthy and exceedingly dry. At the same time there is no lack of good water, which the Indians bring to the city from the river Chirār, 18 miles distant, in casks on mule-back. This mode of transport is so cheap, that the erection of a distilling apparatus in Payta would not pay. The cargo of one mule, about 12 gallons, would sell for about 2 reals (about 1*s.* 5½*d.*). Ships take in their supplies of water at Tumbez, a little further north.

When I was at Payta, there were some twenty merchant ships in the harbour. The trade of the place was evidently increasing. This was indicated not alone by the energy of the inhabitants, but by a general well-to-do air. Large, round, broad-brimmed straw hats are annually exported to the value of 400,000 dollars. Of goat-skins, the annual stock is about 1200 cwt.; of herb-archel from 1500 to 2000 cwt. There are also at Payta some very remunerative manufactures of castor oil (from the *Ricinus communis*), and its cognate from the piñon bean (*Jatropha curcas*), both of which are found in large quantities in the interior. By an iron machine worked by steam some 85 gallons of the oil are made daily, part of which is used in the country for lamps and in the preparation of soap; but by far the largest portion is exported to the United States.

A few weeks before I reached Payta, there had been accidentally found in a cave among the bare sand-hills which form the naked desolate environs of the town, a quantity of maize, which was supposed to have formed part of a stock which had been placed here by the Incas. It was of a smaller kind than that grown at the present day. The grains, notwithstanding the centuries they had lain interred, were in very tolerable preservation. All along the coast nothing was spoken of but this incident, as though some great treasure had been discovered, whereas it was but some 60 lbs. of maize that were found. Moreover, the interest felt by the Indians in this *trouvaille* had nothing to do with its historic suggestiveness, but because their readily-inflamed imagination pre-

figured boundless stores of maize yet to be lighted upon and made available, without their having to labour for them!

In the course of the afternoon we left Payta, and next day sighted the island of La Plata, distant about 10 miles from the mainland. A tradition, constantly in the mouth of the people, to the effect that the ancient Incas buried here a large amount of treasure, has led to many formal expeditions having been dispatched to this island at various times, every one of which, however, proved abortive. We now began to find the temperature perceptibly rising; for a few hours it was as high as 65° to 70° Fahr.

At 6 P.M. of the 20th, we reached the Taboga Islands, a group of lovely islets, about 11 miles from Panama, where are the warehouses and wharves of the Pacific Steam Navigation Company. Taboga Island, the most important of the group, is only one mile and a half long by half a mile broad, but with the adjacent islet of Taboquille, forms a very convenient crescent-shaped harbour, which unites to a secure haven a tolerably healthy climate, so that during the unhealthy season, when the yellow fever sometimes commits fearful ravages in Panama, many of the inhabitants resort to this island, which, up to the year 1858, had remained entirely free of the scourge.

Late in the evening the English and American papers came on board, from which we got the first intelligence of the march of events at the seat of war in Italy, as also of another world-wide calamity,—the death of Alexander von

Humboldt. Even here on the shores of the far Pacific, the intelligence of the greatest naturalist of our age having departed from among us, made a deep and powerful impression, which not even the tempests which impended over the political horizon, and threatened to envelope the entire world, could allay. Although the outbreak of hostilities between two such powers as France and Austria must inevitably react severely upon the condition of the inhabitants of North and South America, yet little was discussed respecting events in Italy; while the obituary notice of Humboldt was read aloud in the cabin, and many a fellow-traveller inscribed on a slip of paper for preservation those beautiful words which the noble and venerable old savant is said to have spoken, when on a lovely sunny May-day his spirit winged its flight from our planet, whose physical constitution his mighty mind had more closely investigated and comprehended than any other mortal of our day. "How gloriously those sunbeams dart forth; they seem as though inviting the earth to the heavens!"

Thus it was forbidden to the members of the Expedition to find the great naturalist yet alive on their return to their common native land! How full of meaning did those touching words now prove, and how full of mournful memories, with which Humboldt concluded his scientific suggestions to the *Novara* voyagers, when he prayed to Almighty God, "That His Holy Spirit would be with this great and splendid undertaking to the honour of the common Father-

land!" The *Novara* staff above all must doubly regret the death of the "Nestor of Science." The warm and active interest he took in their expedition contributed in no small degree to advance its scientific efficiency, and if it be the privilege of the *Novara* to live in the memory of the scientific world, it will, as the Archduke Ferdinand Maximilian himself expressed it in a letter to the venerable philosopher, "redound in its honour to the latest ages, that it was permitted to associate its name with that of Humboldt, who for three generations of men has been associated with every triumph that has been achieved in the domain of science."

On the 21st, at 7 A.M., we anchored in the roads of Panama. Large ships are obliged to lie to from two to three miles off shore, as the beach is nothing but "slike," and at ebb-tide presents an immense unsightly expanse.

The town of Panama (many fish), built on low green hills amid the most magnificent forms of tropical vegetation, presents when viewed from seaward a most lovely, enchanting aspect, especially to the traveller coming from the sterile sandy shores of the west coast of South America. As soon, however, as he sets foot on the shore, and has entered the precincts of the city, his first pleasing impressions are rudely dispelled. The streets are everywhere narrow and filthy, the houses low and poverty-stricken in appearance; even upon their roofs the luxuriance of tropical vegetation bursts forth! Moreover the chief square with its cathedral leaves an impression of decay. Only a few of the houses situate near the

beach, the property of strangers, and a few of the hotels, have anything of a respectable appearance. The whole population does not exceed 8000 to 9000 inhabitants, of whom about 500 are whites, the rest being negroes and mestizoes. At the time when the railroad was being made across the Isthmus, in the construction of which thousands of Irish and Chinese fell victims to the climate and the severity of the work, the experiment was made of introducing negroes from Jamaica, whose cosmopolitan nature asserted itself by their having increased and multiplied even here. At present there are upwards of 100,000 negroes on and near the Isthmus.

The expense of living in Panama is no longer so exorbitant as it was ten years ago, at the period of the first emigration to the newly-discovered gold-fields of California, when there was no railroad, and the journey across the Isthmus was made partly on mules, partly in small canoes. For from three to four dollars a day, one gets very fair board and lodging at the best hotels. The most expensive item is washing, the charge being 2 dollars (8*s.*) a dozen!! In a climate where European cleanliness necessitates frequent change of apparel, this item alone amounts to some 25 dollars to 30 dollars per month for a single person! Accordingly, it is found to be more economical to fling away several articles of the toilette as soon as they have been soiled, and purchase a fresh supply, rather than pay this heavy tax on the purification of the old garments.

The North American Company, which maintains direct

communication between California and New York, has made such excellent arrangements, that the passengers on their arrival in Panama by the train are conveyed in a small steamer from the station, which is close to the shore, out to the large steamer lying in the roads, which is to convey them to California. The entire time occupied in conveying 700 or 800 passengers with their usually rather heavy baggage from Colon across the Isthmus, and thence to their re-embarkation in the steamer upon the West Coast, does not exceed ten hours. The hotel-keepers of Panama, on the other hand, complain sorely of this arrangement, for whereas formerly no passenger ever crossed the Isthmus without spending one dollar at least, hundreds now pass through without ever setting a foot in the city.

When I was in Panama there existed an "Opposition Line" of steamers, a genuine American institution, of which we have occasional examples in Europe, but which is only to be seen in its full bloom in the United States. Formerly, the fare for a deck-passage from New York to San Francisco was 160 dollars (£33 10*s.*). The "Opposition Line" lowered the fare to 35 dollars, and as out of this sum 25 dollars had to be paid to the railway, there remained only 10 dollars (£2 2*s.*) for the cost of transport and maintenance of passengers on board large handsome steamers from New York to San Francisco! For the public at large this was undoubtedly a vast benefit, and in consequence of the unexampled lowness of fares, an immense number of persons had

gone to California during the last preceding few months. Whereas formerly only adventurers, speculators, or persons of means, could turn their eyes on the land of gold, a poor but industrious labouring population now pressed eagerly thither. Of course, however, it was too good to last:—no enterprise could continue upon such ruinous principles. It was the war of large capital against small; whichever could longest stand the incessant drain, remained in possession of the field. Occasionally, however, a "compromise" is effected between the two parties, but in that case the public is usually the sufferer, since in order to make up for past extravagance, the two quondam foes combine to keep up exorbitant rates.

The salubrity of Panama, though still unhealthy enough during the wet season (May to September), is undoubtedly better than it ever was in former years. The doses of quinine pills with which people used to be presented in society, very much the same way as a pinch of snuff, have become infrequent, neither is it now the custom to drink sherry or brandy and water with quinine in it. Indeed, were foreign settlers to abstain from the practice of frequent meals, which even in more temperate climes cannot be continued in with impunity, the health of the inhabitants would benefit greatly. I repeatedly heard it maintained that the use of ice, which at present can be got in large quantities and at very low rates upon the whole Isthmus, and forms an ingredient of every beverage, and many dishes even, has materially improved the

hygienic conditions of Panama. About 360 tons of ice are imported into Panama annually, or about one ton per diem. The whole quantity is supplied from the North American lakes, chiefly from Boston, and is sold in gross at 7 dollars 50 cents (about £1 12*s.*) per 100 lbs., the retail price being a trifle over a shilling per pound. In order to avoid a glut which might make ice importation unremunerative, and endanger the steadiness of the supply, the Government has kept in its own hands the monopoly of the ice-trade.

By Dr. Le Breton, a French physician long settled in Panama, who, together with an Austrian gentleman, Dr. Kratochwil from Saaz in Bohemia, placed me under the deepest obligation for their cordial hospitality, I was furnished with a variety of most interesting details of the sanitary statistics of the Isthmus, and some curious and valuable particulars respecting the poison with which the Indians arm their arrow-tips. In Panama is published a most ably-edited daily paper in English, the "*Panama Star and Herald*," conducted by two Americans, Messrs. Power and Boyd, which so fully and impartially treats of the political, social, and commercial condition of the Isthmus and the South American Republics, as makes it indispensable for every one to subscribe to it who takes any interest in the development of this remarkable country. It is chiefly due to these two large-minded, far-seeing gentlemen that we possess a statistical detail of the very important commerce of the Isthmus, as well as along the west coast of South America. These

figures now lie before me, and give better than anything else a fair and complete estimate of its present activity, which, it may be remarked *en passant*, has owed nothing to the natives, but is entirely due to the energy of foreigners.

No fewer than 64 powerful mail steamers, of the united burthen of 96,000 tons, and representing a money value of at least £4,000,000, ply, part on the Atlantic side (Southampton *viâ* St. Thomas, and New York to Aspinwall), part on the Pacific side to the various harbours on the west coast of America, and keep up regular communication between Europe and that series of States, consisting of not less than 11,000,000 human beings. The value of the products and merchandise annually passing to and fro across the Isthmus amounts to about £15,000,000, while the amount of precious metals is not very much less.

The pearl-fishery in the Gulf of Panama has of late years notably fallen off from its former importance. At present it lags far behind that of the Persian Gulf, from which there are annually about £300,000 worth brought up, whereas here, notwithstanding the enormous extent of the pearl-oyster-banks, the yearly take of pearls does not exceed £24,000. Indeed the fishery is carried on less for its costly contents than for the sake of the mother-of-pearl itself, of which some 800 or 900 tons are shipped annually.

On 23rd June I went by rail from Panama to Aspinwall, on the Atlantic side. Except on the days when the steamers on either side bring their fortnightly quota of passengers,

the traffic of the line is very small. When, however, the passenger steamer at either end has disembarked her living freight, the Isthmus is all alive, and the coffers of the Company are amply replenished. The number of passengers both ways annually has been estimated at from 36,000 to 40,000, and the gross receipts of the Company at from £200,000 to £1,300,000.*

The fare for the somewhat short distance, 47 miles, is high. There is but one class of carriage, and the charge is £5 5*s.*, besides 10 cents (5*d.*) for every pound of baggage above 30 lbs. But it must always be borne in mind that enormous difficulties had to be overcome in the construction of the line, and that the cost of maintaining the permanent way in anything like order is very great, in consequence of the climate and the rich tropical vegetation. Whoever has struggled through the almost impenetrable forests of the Isthmus, before the rail passed through it, and bears in mind the immense physical difficulties of that laborious operation, would thankfully pay double the sum now charged for performing within an hour or two a journey which often occupied a whole week.

* In 1859, there were forwarded, according to official documents:

		From Aspinwall to Panama.	From Panama to Aspinwall.	Totals.
Passengers		23,206	16,567	39,773
Bullion		3,146,983	57,097,061	60,244,044
Mail parcels of the U. S.	pounds	643,752	184,395	828,147
„ „ England	„	47,060	8,824	55,884
Merchandise	tons	17,278	3,802	21,030
Coal	„	7,618	——	7,618
Personal baggage	pounds	67,698	62,581	130,279

The construction of the Panama Railroad was commenced in 1850, the first sod being cut on the Atlantic side. On 27th January, 1855, the locomotive first performed the journey from ocean to ocean. The cost of construction amounted to about £1,100,000.* This capital was speedily subscribed by the eager speculative Yankees, and, as the result proved, insured from the very first to the shareholders a handsome constantly-increasing dividend.

The concession enjoyed by the Company from the Government of New Granada only lasts for twenty years, from the day on which the entire line is opened; on the expiry of that period the New Granada Government must either pay down 5,000,000 dollars (the entire cost of construction), or extend the concession for ten years more. At the expiration of this second term, the Government may purchase for 4,000,000 dollars, or grant a third term of equal length, after which they are to be at liberty to purchase it for 2,000,000 dollars.

The traffic managers of the line, Messrs. Lewine and Dorsay, showed me the most polite attention. The resident director, Mr. Center, whose office is in Aspinwall, and to whom I had letters of introduction, invited me by telegraph to make free use of the line, as nothing would give him greater pleasure than to become of some service to a scientific traveller. I took with me fourteen goodly packages, chiefly

* The cost of keeping in repair is not less than £100,000 per annum, owing to the destroying energies of the atmosphere and of insects, as also of the rapid growth of vegetation, to keep which under employs not less than 3000 labourers.

collections of natural history. Most of these required great care and attention, some on account of their fragile texture, others in consequence of being of a perishable nature. All these were transported with as much care as though they had been charged the very highest rate of freight. The treatment of scientific travellers is to some extent a measure of the degree of civilization of a people. Hence it is that the North American States and the British colonies are the points of the globe where the efforts of scientific travellers elicit the heartiest sympathy, where he may count upon the most friendly reception, and the most cordial co-operation in carrying out the objects he has in view. And speaking now after ten years of the most varied experiences of travel, I look back thankfully to the conspicuous evidences of good-will which I have universally received from all Americans, from the banks of the St. Lawrence to the shores of the Gulf of Mexico, and recall with gratitude how every class of the community bestirred itself to promote and facilitate the scientific researches of a solitary traveller,—how, more particularly, the press, that great power of the intellect, lent the utmost assistance of its influential position to forward my wishes, and how its columns, thanks to the interest its conductors themselves felt, were always open in the most remote districts to welcome the stranger. And now, when for a second time I received from the sons of that same mighty republic the same cordiality of welcome, I recalled with redoubled vivacity the happiness of those long-vanished but most pleasant days, as I

record this tribute with so much the more satisfaction, that I felt it was not the individual but his profession that was thus honoured, as is abundantly proved by the experience of many another scientific traveller.

The journey across the Isthmus, right through the heart of the primeval forest, which was decked out in its gayest attire, is one of the most exciting, soul-stirring scenes that the eye of the lover of nature ever rested upon. In no part of the world have I seen more luxuriant and abundant vegetation than is presented by the forests of Central America, and more especially upon the Isthmus. And, as if to heighten still further the sense of marvel and enchantment, one traverses this magnificent forest landscape behind a locomotive running on its iron track. What a contrast! The wild ravel of creepers and the green feathery branches of the palms almost penetrate into the waggons, and tell with unmistakeable emphasis that the traveller is indeed surrounded by all the beauties of Nature in her tropic garb. Trees of the most varied description and of colossal dimensions flourish in the foreign garment of a borrowed adornment. Between each solitary giant of a forest tree, parasites and *Lianæ* spread their delicate green coils, while many a gigantic stem, enveloped in thousands of beautiful shoots, or dead trunk choked in the embrace of a parasitic creeper, attracts the eye as the train speeds past. So quick and so strong is the process of vegetation here, that every section of this line has twice in each year to be freed from the encroachments of the forest-children; nay, were the

line to be left unused but for one twelvemonth, it would be difficult to discover any trace of its existence, so completely within that time would the whole district become once more a wilderness!

The physico-geographical conditions of the Isthmus have only latterly been made the subject of profound and exhaustive study by a German naturalist, who has published the result of his researches. The justly-dreaded climate was the main cause of its having been so long left unexamined. To that keen indefatigable *savant*, Dr. Moritz Wagner, my whilom faithful travelling companion through Northern and Central America, is due the praise of having first accurately and analytically investigated the territory of the Isthmus,—that dam which separates two ocean worlds as it may be considered from one point of view,—that bridge which unites two immense continents as it may be regarded from another,—and who, in so doing, has contributed many new and important facts to our previous stock of statistics respecting the hypsometrical and geognostic features of the Isthmus, as well as to the geographical distribution of the forms of organic life which are found there.

In the course of constructing the railroad, the geological profile of the country was laid open through a length of 47 miles. This fortunate circumstance the German naturalist availed himself of as an excellent opportunity for carrying out his design, but his labours were none the less beset with difficulties, and only his indomitable perseverance could have

carried him through the tropical intermittent fevers and mental anxiety, which at one time threatened to prostrate his physical strength, or even to lay him in his grave. Wagner had been first struck by the very remarkable evidence of an entire alteration in the form of the hills between Veragua and Obispo. This change in the vertical configuration, the decided depression of the Cordilleras, which is most apparent between Limon Bay (at the mouth of the Chagres river) and the Gulf of Panama, is just as much an important geological fact for physical geography, and for solving the important questions of the present and future commerce so intimately connected with the artificially cutting through of this neck of land, as the change in the horizontal configuration or the sudden compression of this part of the world in the northwest of the province of Choco, or the rugged steepness that characterizes the range of hills which forms the contour of the coast line. The geological and botanical facts, those most reliable of all data for physical generalization, with which Wagner illustrates his interesting exposition of the natural character, the prevailing formations, and the most prominent representations of the vegetation of the Isthmus, form at present a valuable part of the collections of natural history in the Museum of Munich.

The journey across is not made at the speed one would expect on a line where the locomotive is in charge of a Yankee. It takes four hours to do the $47\frac{1}{2}$ English miles. The stations are very numerous, often situate in the heart of the forest,

where there are only a few labourers' huts. Moreover, halts are frequent at spots where there are no passengers visible, either to take up or set down. One of the most beautiful of the stations is that at the little village of Paraiso, about nine miles distant from Panama, which lies in a kettle-shaped glade. At this point large clearings have been made, and the eye ranges over a rather more extended landscape, only bounded in fact by the contour of the neighbouring hills. The only inhabitants are negroes, mulattoes, and mestizoes, who for the most part are employed as labourers on the line. A few miles after leaving Paraiso, the train reaches the station of Culebra, or, as it is more generally called by the inhabitants, "the Summit," the narrow steep rise of which marks the water-shed between the Rio Grande, falling into the Pacific, and the Rio Chagres, which debouches into the Caribbean Sea. This is the highest point of the line. The actual height of the pass is 287 English feet, but it has been lowered by about 25 feet, so that Summit station is only 262 feet above the mean level of the ocean.

The most important village along the line is Matachin, a large straggling village, which, however, seems to be inhabited exclusively by negroes, mulattoes, and Zamboes. As I have previously remarked, the majority of the labourers on the line emigrated hither from the West Indies, especially Jamaica, attracted by the high wages of labour, and after it was completed, settled along its course in neat, clean, but small cottages. And whereas the baleful tropical climate

decimated every other class of labourer employed during the construction of the lines, these latter have flourished here better than any other description of settler. They seem to be universally healthy and well-fed, and their oceans of children, who impart life to the landscape, attest that the women have not lost their fertility. They all seemed to be well and were neatly clothed. However, when I crossed, it happened to be a holiday, and consequently every one wore his Sunday dress, clean white trowsers, white shirt, and a narrow-brimmed hat of fine straw.

Near Barbacoa station the eye of the traveller, that has hitherto revelled in the voluptuous beauties of nature, rests with pleasure on a splendid trophy of human industry, an iron bridge, 600 feet long, which spans the River Chagres at this point. It was on one of the Cerros, a little west of Barbacoa, that Vasco Nuñez de Balboa first beheld both the Atlantic and the Pacific oceans at once, and, regarding his stand-point in the Isthmus as a mere handful of earth, may have imagined himself a conqueror, whose glance comprehended both worlds.

The last portion of the line, as we near the Atlantic side, passes over vast swamps, which rendered the construction of this portion of the road exceedingly difficult and very expensive. Aspinwall itself moreover, the terminus of the Inter-oceanic Railway, lies on a small island, two-thirds of the surface of which is morass, and covered with tropical marsh vegetation. This station was selected, notwithstanding its

very unwholesome climate, chiefly because the roadstead of Limon Bay furnishes a safe anchorage in all weathers for vessels of even the largest size.

This small island, only 7000 feet long by 5800 wide, which was first named from the immense quantity of *Hippomane mancinella,* a tree with a very powerful poison, that is found on it, and is now called "Isla de Manzanilla," was formally made over by the New Granada Government to the American Company at the beginning of the works in the year 1852, and was used by it for the new city, as also for the erection of warehouses, &c.

Aspinwall, or Colon, as it is sometimes called, numbers at present some 1500 inhabitants, of whom 150 are North Americans and English, the rest negroes and mulattoes. The little town, with its neat frame-houses and clean cottages, involuntarily reminds one of the new settlements in the North American States. Here, besides the residences of the officials, are the warehouses and workshops of the Company. In the latter about 700 workmen are employed, while four schooners maintain uninterrupted communication between Aspinwall and New York, for the purpose of providing for the various wants of the crowded establishment. Even the very provisions are imported from North America. The resident director, Mr. A. J. Center, received me with the most hearty welcome, and during my entire stay continued to display the same kindness and interest, which he manifested from the moment he received my letter of introduction.

In Aspinwall the climate has within the last few years become more salubrious than at the period of the first colonization, when "Chagres fever" acquired a gruesome reputation, and no resident who stayed above two months in the place escaped the attack of the fever. Even mules and dogs could not escape the universal malaria. However, to this day a lengthened residence on this marshy soil is not unattended with danger, although the miasmatic poison has undoubtedly lost much of its virulence. The negroes longest resist its dangerous effect, after whom come the coolies, then the Europeans, while the Chinese are invariably the earliest attacked.*

On 23rd June, about midnight, I left Limon Bay in the steamer *Medway*. Having been committed to the charge of her captain by the kind attention of Mr. B. Cowan, the English Consul in Aspinwall, I found myself more comfortable and better attended to on board this small filthy old tub than I could possibly have expected. The Company avowedly employ in the Intercolonial lines the worst and most uncomfortable of their vessels, and the traveller who has to make any short passage, for instance, among the West India

* The statistics of mortality among the various races on the Isthmus for the year 1858 give the following results.

Of the natives, there die annually	.. ..	1 in 50
„ immigrant negroes	.. .. ..	1 in 40
„ Coolies	.. .. ..	1 in 40
„ Europeans	.. ..	1 in 30
„ Chinese	.. .. ..	1 in 10

islands, is exposed to the doubly disagreeable feeling of paying a very much higher rate of fare, for very inferior accommodation. The *Medway* was an old acquaintance of mine in my previous West Indian rambles, as in former years she performed the mail service between Belize, Jamaica, Hayti, Porto Rico, St. Thomas, and Havanna, and this opportunity of renewing my acquaintance with her I hailed with anything but a sentiment of satisfaction.

Early on the 25th June we ran into the extensive and beautiful bay of Carthagena, which now-a-days is only accessible on one side, the second entrance having been destroyed by the Spaniards during their supremacy, and never reopened. This seaport contains about 11,000 inhabitants, many churches and monasteries, as also large fortifications, but of trade and commerce there is next to nothing. In the roads there lay but three small coasting crafts. For the naturalist, and especially for the zoologist, Carthagena is on the other hand classic soil.

Our steamer was fairly beleaguered by shoals of small canoes with natives on board, who offered for sale any quantity of the most various and beautiful little denizens of the surrounding country. Any naturalist who should spend a short time here, might, with the assistance of the Indians, who seem to be both zealous and apt collectors, get together an extensive and most valuable zoological and botanical collection. Carthagena indeed presents in particular great advantages for the shipment to Europe alive of the more inter-

esting animals. These steamers do not take much above a fortnight hence to England, and if dispatched about May or June, the animals would sustain but little detriment from the change to a European climate at that season. Thus on the present voyage of the *Medway* there were numbers of animals and chests of plants in full bloom, consigned to various museums and private collections in England.

On 30th June we anchored in the small but delightful harbour of St. Thomas, with bright green hills forming a picturesque background, relieved by the white houses of the inhabitants picturesquely grouped along their slopes.

St. Thomas had changed little from what I remembered it at my previous visit in 1855. At the last census it had 15,000 inhabitants, and its trade is visibly increasing. It is, however, extremely difficult to get at the statistics of the annual amount of shipping here, as there is no toll-house, and the Danish Government publishes no official information as to the general trade. According to a German merchant long resident here, the number of foreign ships of all nations entering and leaving the port amounts to 860 annually, of coasters about 3500, while the annual value of merchandise so transshipped is about 6,000,000 dollars. One very remarkable trade is that in ice, which reaches the enormous amount of 1000 tons annually, chiefly for distribution among the adjoining islands, by far the largest proportion of which comes from Boston, where it is worth 20 dollars per ton, and at St. Thomas 80 dollars per ton, or $3\frac{1}{2}$ cents per lb. One may

conceive that the entire ice-trade to the West Indies, South America, China, the Malay Archipelago, and the East Indies is in the hands of the keen North Americans, who evince a capacity for making a genial use of a natural phenomenon, which a less speculative race of men associate with the idea of cold, discomfort, and stagnation of intercourse.

M. A. Rüse, a wealthy chemist and zealous naturalist, by whom as by other German residents I was most kindly received, has acquired much distinction from his profound acquaintance with the lower animals of the West Indies, of which he possesses a small but valuable collection, chiefly of the Fauna of the islands of St. Thomas, Ste Croix and Trinidad, and was so exceedingly courteous as to present me with duplicates of several of the most interesting. M. Krebs, merchant, and M. Kjaer harbour-master, also in their hours of relaxation gave me much valuable information on kindred topics, the latter gentleman further presenting me with specimens from an excellent collection he had formed of petrifactions.

What, however, afforded me the sincerest satisfaction on the occasion of my present visit to St. Thomas, was the striking examples of industry, intelligence, and social comfort of the negro population. Of all nations among whom this curse of slavery has been implanted, the Danes have best comprehended how practically to solve the difficult problem of emancipation. The number of slaves in Danish colonies was at all times very small, and their manumission consequently more easy.

Nevertheless the mode adopted in getting rid of the evil is deserving of attention and imitation. The duty of labouring does not cease with the means of compelling it. Slaves emancipated by the Danish Government may spend the wages they receive for their labour at their own discretion, and are permitted to change masters at pleasure, but they cannot quit their former employer till they have found a fresh one. The rate of wages at St. Thomas is pretty high, and the black population, who form the largest contingent of the labouring population, not only finds constant occupation, but is remarkably well paid besides. The negroes on this island are, however, very handy and quick, thanks to the constant intercourse with foreign nations. Many of them speak several languages fluently, and a German traveller who visits the island for the first time is apt to be not a little surprised at finding himself addressed in his mother-tongue by a swarthy son of Africa.

Our departure was fixed for 1st July. The various mail steamers which had been expected from the different ports of the West Indies and the eastern coast of Central America, had all arrived. The fine and comfortable but old and slow steamer *Magdalena* was to leave for Europe at noon. Suddenly a sailing vessel came in like a Job's comforter, with the intelligence that the splendid new steamer *Paramatta*, which was about due with the mails from England, had on her first voyage gone ashore on the Anegada shoal near the island of Virgin Gorda, 60 nautical miles from St. Thomas, and with her

40 passengers, and a valuable cargo, was in need of instant relief. This intelligence again delayed our departure. It was at first determined to send off every disposable steamer to the scene of the disaster, and to detain the *Magdalena*, till full particulars of the mischance had been obtained, for transmission to the directors in London. Afterwards it was arranged that the *Magdalena* should proceed to the spot where the *Paramatta* was lying nearly high and dry, to assist if possible in floating the ship off the reef.

At 6 P.M. accordingly we steamed out of the Bay of St. Thomas. On the present occasion the *Magdalena* had 163 passengers on board, the majority of whom were planters from the various West India islands, bound on a pleasure trip during the hot season. Not merely the black servants, but even their white and chocolate-coloured masters, broke out into the most marvellous English or French jargon, according as they came from Jamaica and Demerara, from Martinique, Guadaloupe, or Hayti. The presence of a great number of children, who, so long as they kept free of sea-sickness, evidently considered the whole of the quarter-deck as especially designed for them to play on, in which notion they were zealously upheld by their mothers and their nurses, made the passage anything but agreeable. However, the impression made by the grown-up passengers was such as to heighten one's aspirations for a speedy voyage. The intelligence which had been received from the seat of war in Italy gave rise to much excitement, and within the first twelve hours had made it ap-

parent that it was vain to hope for a pleasant voyage. Nothing was heard on every side but politics, and it may be left to the reader to guess in what tone they would be discussed, when Frenchmen, heated with visions of *la gloire militaire*, were the principal spokesmen.

Early the next morning we were near the reef, which had disabled the largest and finest of the Company's ships, that had just cost £140,000. The unfortunate ship had struck the reef when running 11 knots an hour, and now lay on her starboard side on the reef, having careened so far over that her port paddle-wheel was quite clear of the water. A committee on the spot having decided that she must be entirely dismantled before even her bare hull could be got off the reef, it was resolved not to detain the *Magdalena*, it being thought desirable that she should as speedily as possible make her way to Southampton, so as to enable the directors at once to determine what course to adopt, before the sailing of the next steamer.. Our captain was furnished with a general account of the accident, together with a sketch by the head engineer of the position of the *Paramatta*, and with these the *Magdalena* was permitted to take her departure.

The voyage threatened to be long and tedious, though attempts were made to enliven the mornings and evenings by music, and an occasional dance on deck. The former might have been made very agreeable, had not the *chef d'orchestre*, who was second steward, ventured on playing his own compositions as often as possible. To please the susceptibilities of

the two nationalities, *God save the Queen* and *Partant pour la Syrie* were regularly called for each night. A more serious cause of alarm was the fear lest we should have to put into some intermediate port to coal. When she left St. Thomas the *Magdalena* had 1200 tons on board, but as, notwithstanding constant calms and a sea like a mill-pond, she never made above 190 to 220 miles in the early part of the voyage, at a consumption of 70 tons per day, there seemed every prospect of our exhausting our supply. As she consumed her stock, however, she lightened perceptibly, till she even got up to the for her unusual speed of 280 miles a day. How different from the same Company's ships *Atrato* and *La Plata*, which frequently make 340 miles a day, and in fact average only 13 days on the passage home, while the average of the *Magdalena* and her consorts is 18 days!

At last, on 18th July, we sighted the Lizard's. Although barely 200 miles from our destination, the captain thought it best to put into the nearest port for a supply of coal, and shortly after noon we anchored in Falmouth Harbour, where the first intelligence we got was that peace had been concluded. Singular to say, even this intelligence produced no accession of harmony between the two great political parties on board. As for myself, I had kept as much as possible by myself; and now stepping ashore, I wandered through the narrow dirty streets of Falmouth, which presents the accurate type of the old-fashioned English provincial town. The meadows and sloping hills around shone forth in all the fresh

verdure of spring. Even the traveller fresh from the voluptuous loveliness of the tropics, finds ever new beauties in the manifold variety of nature. The more the student of Nature walks with her and finds in her his chief pleasures, the more receptive does his soul become for all that is marvellous and beautiful, as from day to day they present themselves in new and unexpected phases.

The same evening the *Magdalena* resumed her voyage, and about noon on the 19th we passed the renowned "Needles," and in two hours afterwards reached Southampton. Dire was the confusion on board, each person wishing to have his own trunk conveyed on shore the first. I found with my voluminous boxes the most courteous consideration. It sufficed to explain the object of my travels to have all my luggage passed without examination. For down to the English Custom House officials, who are not, it must be confessed, prone to show much tenderness to travellers' baggage, extends that honourable feeling of respect for science which Englishmen of all grades seem to entertain. The same evening I reached London.

As the next steamer for Gibraltar was not to leave for eight days, I immediately started to London, and availed myself of this opportunity to renew old acquaintance, and make up my leeway as regarded the important strides and valuable discoveries made in the fields of science during my long absence from Europe. The warm interest and cordial reception I met with from such gentlemen as Sir Roderick

Murchison, General Sabine, Sir Charles Lyell, Professor Owen, Dr. Gray, Mr. Henry Reeve, Mr. Crawford, Mr. John Murray, Mr. Ellis, and many others, was the most gratifying and conclusive evidence of the interest and high expectations which the *Novara* Expedition had excited among scientific circles in England.

On 27th July I embarked on board the P. and O. Company's steamer *Behar*, Captain Black, *en route* to Gibraltar, which I reached after a passage of $4\frac{1}{2}$ days, and, what is still more curious, by a singular coincidence, at the very same moment when the *Novara*, with every stitch of canvas set, was proudly careering through the famous Straits!! As the noble frigate shot past our steamer, Captain Black saluted, and was so thoughtfully kind as to signal the *Novara* that I was among his passengers. Very soon after, both ships anchored in the roads of Gibraltar. In the course of my overland journey from Valparaiso to Gibraltar, I had travelled 8832 nautical miles, and had been but 29 days actually travelling.

I now felt pervaded by a sentiment of profoundest gratitude to a benevolent fate, which had led me safely and pleasantly through so many dangers till I rejoined that Expedition with which not alone the best and happiest remembrances of my life are henceforth associated, but which opened to me the unspeakably gratifying prospect of being better able to contribute, by extended knowledge and experience, to the advancement of science in my native land!

XXIII

From Gibraltar to Trieste.

From 7th to 26th August, 1859.

First circumstantial details of the War of 1859—Alterations in Gibraltar since our previous visit—Science and Warfare—Voyage through the Mediterranean—Messina—The *Novara* taken in tow by the War-steamer *Lucia*—Gravosa—Ragusa—Arrival of H. I. H. the Archduke Ferdinand Maximilian at Gravosa—Presentation of the Staff—Banquet on board the screw corvette *Dandolo*—Pola—Roman Amphitheatre—Porta Aurea—Triumphal return to Trieste—Retrospect of the achievements and general scientific results of the Expedition—Concluding Remarks.

Eighty-two days elapsed between the departure of the *Novara* from Valparaiso and her arrival in the harbour of Gibraltar. They had been as many days of dreadful trial and disaster for our country! While the good ship was careering along in mid ocean, and in an unusually short space of time had sailed over 10,600 nautical miles, the for-

tune of arms had gone against our House, and we now heard for the first time of the desperate battles, the heavy losses, the sudden armistice of Villafranca! The Commodore at once telegraphed to Trieste the news of our arrival, and asked for further instructions.

Among our friends and acquaintances at Gibraltar many changes and alterations had taken place. The former Governor, Sir James Ferguson, had in the interim been replaced by Sir W. Codrington. The Austrian Consul, the estimable Mr. Longlands Cowell, was dead, and in his stead Mr. Frembly attended provisionally to the duties of the office.

The heads of the community, the Governor, the staff, Mr. Creswell, Postmaster-General, Mr. Frembly, &c., paid us marked attention on our present visit. Singular to say, no one here seemed to be aware of our having been declared neutral by most of the European powers, thanks to the far-sighted circumspection of the projector of the voyage, and consequently some apprehension had been felt lest some war-ships of the enemy might have encountered the *Novara* in American waters. But albeit of late years we have been pretty well accustomed to see even written treaties trodden under-foot, yet, in the present instance, the capture of the *Novara* had been stringently prohibited to all French cruisers. For even in the Tuileries the consequences of such an abuse of power had been well foreseen; it was felt moreover even there, that in our time the most powerful can no longer dispense with science or disregard its interests, that any violence

offered to her votaries is an outrage upon mankind and civilization. So great, indeed, was the anxiety felt at Paris to avoid any possible collision with the *Novara*, that in addition to the existing declaration of neutrality, special orders were dispatched by the French Government, and from amid the din of battle and the thunder of artillery, the word went forth: "The *Novara* may proceed unmolested, for she is freighted with scientific treasures, and science is the common benefit of all nations!"

On 7th of August, a telegraphic dispatch was received in the course of the morning from the Lord High Admiral, with instructions for the *Novara* to proceed under sail to Messina, where a war-steamer would be in waiting to take us in tow. The same afternoon we weighed anchor on our way up the Mediterranean.

On 15th August we sighted the northern shores of Sicily, and the same evening could plainly perceive the brilliant red lights of the newly erected light-house on Cape San Vito, the extreme N.W. point of the island. Diversified by frequent calms, and but occasionally favoured with gentle breezes, our progress was necessarily very slow. On the 16th we passed the island of Ustica, and the following day the Lipari Islands, and at last, about 7 A.M. of the 18th, we reached the Straits of Messina. A pilot who came on board informed us that an Austrian war-steamer was lying off Messina. Orders were now given to fire a few blank shot, to advise her commander of our arrival in the Straits, after which we resumed our

course. A few hours more and we were in tow of the steamer, which proved to be the *Lucia*, the same vessel which upwards of two years before had brought us as far as Messina on our outward voyage. We now received letters from friends and relatives at home, as also the customary and inevitable poetical effusion, which some sailor poet had written on "The Return of the *Novara*."

On the night of the 19th August we were off Cape Santa Maria di Leuca, which marks the entrance of the Adriatic Gulf, and in the afternoon of the following day passed Caste Nuovo near Cattaro, and the same night anchored in the harbour of Gravosa in Dalmatia. The captain of the *Lucia* had been dispatched to bring us hither, there to wait further orders.

The following morning, Sunday, 21st August, the naturalists and superior officers made an excursion to the highly interesting city of Ragusa, only a few miles distant, which communicates with Gravosa by a beautiful wide well-kept road. For the first time in 28 months our feet once more trod our native soil.

Next morning, about nine, the imperial steam yacht *Fantasie* came into port, with H. I. H. the Archduke Ferdinand Maximilian on board, accompanied by the Archduchess. The Lord High Admiral stood on the paddle-box, and saluted us most heartily, repeatedly waving his cap, to which the crew of the *Novara* replied by a shout that made the welkin

ring. The screw-corvette *Dandolo* shortly after anchored near us.

About noon the Archduke came on board, and inspected the crew and ship, after which he expressed himself in the most kind terms to the officers of the ship and the scientific corps of the expedition. The Archduchess afterwards had a levee, at which the officers and naturalists had the honour of being presented to her Highness, who addressed to each a few gracious words of welcome and interest.

In the evening there was an elegant banquet of forty covers, at which the Archduke presided, his consort also sharing in the festivities, during which his Highness distinguished the members of the Expedition in proposing the toast, "The men of the *Novara*, whose names will belong to Austrian history."

On 23rd August our frigate, accompanied by the *Lucia* and the screw-corvette *Dandolo*, sailed for Pola. Shortly before our departure the Archduke again came on board, and himself brought with him a long list of promotions. The entire crew were promoted one grade, and all the midshipmen were made officers.

On the 25th August we passed, during the morning, the light-tower of Promontore, standing on a solitary rock that rises out of the sea, hardly a cable's length from the shore, and at 11 reached Pola, the chief naval arsenal of Austria. Here we availed ourselves of the stoppage to visit some of the classical monuments of Pola.

Few cities can present better-preserved or more extensive mementoes of Roman architecture than this, the ancient *Pietas Julia*, so named because shortly after its destruction by Julius Cæsar, it was rebuilt at the instance of Julia, the daughter of Augustus. The majestic amphitheatre, of elliptical form, rises on the slope of the hills, so that to remedy the inequality of the ground the portion next the sea is held up by a succession of buttresses. The dazzling white of the stone does not present any traces by which one would guess its age. This relic of antiquity is in far better preservation than the Colosseum of Rome, or the Amphitheatre of Verona, and would have been far more perfect had it not been used as a stone-quarry during the days of Venetian supremacy, when entire ship-loads of this brilliant white stone were transported to Venice, there to be used as building material.

Near the amphitheatre, on the side next the city, the stranger is struck by another beautiful edifice, the *Porta Aurea* (golden gate), a monumental structure in the Corinthian style, which, according to one of the inscriptions, was erected by his widow, Salvia, at her own expense, in honour of Lucius Sergius Lepidus, tribune. For harmony of proportion, richness and elegance of decoration, and perfect preservation, it may be cited as one of the best existing specimens of Roman architecture. A temple to Augustus and another to Diana also attract the astonished gaze of the artist and antiquary, while many another object of classical interest lies prostrate on the earth for want of means, or perhaps, more probably,

through indifference. It is highly probable that, with the rapid development of the town, some interest will also be taken in preserving its antiquities.

The importance of this spacious, easily accessible, secure, and well-fortified harbour, induced the Austrian Government during the last few years to commence public works on a large scale, which was munificently projected and fully carried out, and have resulted in opening for Pola a prospect of future importance second to none on the Adriatic, making it the Portsmouth of the Austrian Empire.

In the evening we again set sail, and about 11 A.M. of the 26th escorted by a squadron of above a dozen ships of war, in two columns, the one led by H. I. H. the Archduke Ferdinand Maximilian, the other by our Commodore, we neared the imposing roadstead of Trieste. As the *Novara* passed beneath the walls of the splendid château of Miramar, the residence of the Archduke, a guard of artillery saluted the home-returning wanderer, and almost immediately afterwards the cannon of the citadel of Trieste thundered forth their salute.

A Lloyd's steamer, having on board the principal officials of the city, as also a few friends, was now seen wending its way towards us with a band of music on board, and fell into the procession. The latter made its way, enveloped in clouds of smoke, to the picturesquely-situated city, as far as the Bay of Muggia, where each ship let go her anchor in her appointed position, and—THE VOYAGE WAS OVER.

On the transcriber of the foregoing literary detail of the incidents of the voyage of the *Novara* still devolves the task of presenting a brief summary of the chief objects aimed at, and the actual scientific results attained by the Imperial Expedition, so as to moderate the exaggerated expectations of one-set of readers, and to rectify the hasty, depreciatory judgment of others, by stating obvious and convincing facts.

He feels, above all, compelled to examine the question, which not alone criticism but the entire educated world will address with reference to an undertaking begun under such auspices and of such universal interest, "What are the actual results, and what those to be anticipated from the *Novara* Expedition? How did its members respond to the efforts made to provide them with every possible appliance that munificence could supply?"

In order aright to answer this query, whether the first Austrian Expedition round the globe has really answered the expectations formed of it, it is necessary to bear in mind that its first and foremost object was the instruction on an adequate scale of the officers and midshipmen of the Imperial navy, and that scientific investigation was always regarded as of secondary importance to that chief object.

The descriptive portion of the voyage of the *Novara* must be considered simply as the precursor of a series of scientific publications which, thanks to Imperial munificence, will be published at the expense of the State. The nautico-physical portion will include the astronomico-geodetical, magnetic,

and meteorological observations made throughout the voyage, and will appear under the auspices of the Imperial hydrographic Institution at Trieste.

The abundant materials collected in the departments of natural history, statistics, and commercial policy, will be prepared by the various gentlemen who accompanied the Expedition, and comprise as many sections as there were scientific branches represented on board ship during the voyage. These publications will embrace, in a collected form, the observations; investigations, and results obtained in the course of the entire campaign, relating to Geology, Zoology, Botany, Ethnography and Anthropology, Medicine, Statistics, and Trade.

And while these various works can only after their publication admit of a just opinion being formed as to what has been achieved in this respect by the Expedition, the numerous and valuable collections of objects of natural history already give an idea of the activity and research of each member of the scientific staff in the course of the voyage.

The zoological collection comprises above 26,000 specimens, partly collected by the two zoologists themselves, partly presented or purchased; they consist of 320 mammalia, 1500 birds, 950 amphibiæ, 2000 fish, 6550 conchyliæ, 13,000 insects, 950 crustacea, 500 molluscs, 60 skeletons, 50 skulls, 120 nests, and 150 eggs.

The botanical portion embraces several very comprehensive and valuable *herbaria* and collections of seeds (in selecting the latter the capabilities of the various portions of the Empire were

carefully borne in mind, with reference to the power of propagating the plant), besides a large quantity of fruits and flowers of tropical plants, preserved in acetic acid or alcohol, as also Indian and Chinese drugs, and specimens of ornamental and useful woods.

The mineralogical, petrographical, and palæontological collections consist of several thousand specimens of mineralogy and petrifactions, part collected by the geologist himself, part presented by scientific Institutes, or private donors, or purchased.

The ethnographic collection embraces 376 objects, such as weapons of the most diverse form, house utensils and implements of labour, ornaments, amulets, carvings, idols, headgears, masks, pieces of clothing, models, textile fabrics, manufactures in bark, musical instruments, Cingalese manuscripts, as also fragments of palm-leaves, bamboo-reeds, and bark, all variously transcribed. Some of these various objects are the more interesting, as furnishing, so to speak, the last proofs of the aboriginal skill which, in proportion to the increasing intercourse of the savage tribes with European civilization, is rapidly diminishing, and in all the principal colonies may be considered as already extinguished.

The anthropological collection consists of 100 skulls of various races of men, and includes a complete Bushman-skeleton, besides a great variety of interesting physiological and pathologico-anatomical preparations.

But it is not merely in its general, nautical, scientific, and

politico-economical features that the voyage of the *Novara* has reacted in a suggestive and instructing manner upon those who were privileged to belong to the Expedition. It has widened the horizon of political knowledge, presented the opportunity of instituting interesting comparisons between the conditions of the various countries visited, and has furnished many an instructive insight into the transmuting process, which the possession of civil and religious liberty effects upon the material welfare and intellectual energy of every race and land, from pole to pole. And although mankind is subjected to the powerful influences of climate, nourishment, soil, and natural phenomena in general, yet it is not less certain that by freely developing the physical and intellectual powers, those influences may be materially limited in extent of operation, and modified in practice; so that, while we see a people inhabiting a country, where Nature has lavished her utmost treasures of fertility, beauty, and loveliness, languishing spiritually and physically under the oppres sion of a despotic power, and the land itself hastening to impoverishment and decay, we perceive on the other hand that another, far less favourably situated, has been able under free institutions to become by its own unaided energy the marvel of all nations, colonizing every region of the earth, and extending its commercial and political importance over the entire universe.

What a melancholy picture of stagnation and decay is presented by the Spanish and Portuguese possessions in Asia,

Africa, and the West Indies, by the Slave-empire of Brazil, and the Hispano-American Republics, with their mestizo dictators, as compared with the mighty development and glorious promise of the British colonies in Asia, Africa, America, and Australia, governed as they are by constitutional laws, and enjoying full civil and religious rights! Here the energy of free self-governing men, aided by a keen spirit of enterprise and investigation, has obtained a victory over all impediments of a primeval nature, and not alone opened to European civilization new channels for the extension of commerce and industry, but also accomplished important social and political reforms, for which many a civilized state in old Europe is still sighing in vain!

And to the German who has circumnavigated the globe, the consideration of these lofty themes is mingled with a glow of pride and satisfaction, in reflecting that it is a kindred Anglo-Saxon race, to whom apparently has been assigned the glorious mission of diffusing a new life over the earth, of carrying the light of Christian civilization, of political liberty, and spiritual culture, to the most primitive tribes in the furthest regions of the world, and of heralding, amid the ruins of slavery and despotism, the day-spring of a lasting era of Freedom, Peace, and Prosperity!

THE END.

VOL. II.

APPENDIX A.

A VOCABULARY

(ARRANGED UPON GALATIN'S SYSTEM)

OF THE LANGUAGE OF THE NATIVES OF THE NICOBAR ARCHIPELAGO.*

Name of object in English.	Dialect used in Kar Nicobar (called PUH by the natives). The most northerly island, 9° 10′ N., 92° 36′ E.	Dialect used in the Central Group, consisting of the islands of Nangkauri, Kamorta, PuloMilú, Kondúl, and Lesser Nicobar.	Corresponding words used by the Malay inhabitants of Pulo Penáng, 5° 25′ N., 100° 21′ E.
God	—	—	—
evil spirit	—	cewée	hontú
man	kigonje	báhju	orang
people	tarík	—	—
woman	kigána	angána	poorampúan
old woman	—	angána-oomiáha	—
boy	lúenda	kanióom	booda-kitschi
lad	marengla	ilúh	—
young girl	nia-kookána	kanióóm-angána	booda-pooram-púan
child	niá	poa	ana-kitschí
father	jong	tschía	bápa
my father	jong-tióo	—	—
mother	kamioján	tschía-angána	ma, mák
old man	jong-niá	angónje	chaudáu
old woman, feeble woman	—	koomhóois	chaudán-pooram-pooan
son	kóoan	góan or ilúh	ana-chaudán
daughter	kóoan	kanióom-angana	ana-pooram-pooan

* The orthography of the above vocabulary is founded upon the ordinary rules for English pronunciation. The syllable on which the chief stress is laid is marked when necessary by an accent.

Name of object in English.	Dialect used in Kar Nicobar (called Puh by the natives). The most northerly island, 9° 10′ N., 92° 36′ E.	Dialect used in the Central Group, consisting of the islands of Nangkauri, Kamorta, Pulo Milu, Kondúl, and Lesser Nicobar.	Corresponding words used by the Malay inhabitants of Pulo Penáng, 5° 25′ N., 100° 21′ E.
brother	kanána	tscháo-angana	kaka
head	kóoi	góeh	kapalá
hair	kooiá	jogh	ramut
face	gúa	matscháka	mooká
forehead	mal	lal	dái
ear	nang	neng	talénga
earrings worn by natives	nang	itiéi	—
eye	mat	oal-mát	mattá
eyebrows	—	ok-mát	—
nose	elmé	moáh	idóng
nostrils	—	ol-moáh	lo-bang-idong
chin	—	enkóin	dagóo
cheek	—	tapóah	pípi
breast	—	alendája	dáda
throat, larynx	—	ungnóka	kronkóugan
calf of the leg	—	kanmoána	jantong-bóotis
mouth	minú	manóing	mulót
tongue	litág	kaletág	lidá
tooth	kanáp	kanáp	jijée
beard	máin-kóoa	inhóing	boolo-báo
neck	likún	unlóngha	tinkó
arm	kel	koál	langán
hand	koontée	oktái	tangán
palm of the hand	—	oal-tái	—
finger	heng	kani-tái	charée
nail	kiusó	kaischúa	kookóo
body or trunk	aláha	okáha	badán
belly	áik	wuiáng	baróot
navel	—	fon	boosát
thigh	kaldrán	booló	pahá
foot	eldrán	lah	tapa-kakí

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toes	kundrán	kanéch-lah *or* ok lah	daloognoo-kakí
bone	tangáe	ung-éjing	tooláng
skin	—	ihé	kooléet
knee	—	kohanoáng	lutót
heart	faniéoola	kióyen	hangát
blood	mahám	wooáh	dará
village	panám	mattái	kampong
chief	máh	oomiáh-mattái	capitan, capitan-kampong
warrior	hol	—	toomóh
friend	moowée	jól	bái, bánia-bái
friendship	hóldra	—	—
house, hut	patée	njee	roomá
kettle	tzitóom	poonhágua	balanga, panél
arrow	alindreng	bel	ana-paná
bow	lindreng	donna	paná
axe, hatchet	hanyeng	enlóin	kapá
flint	—	hindél	sanapáng
cannon	—	hin-wáu	mariám
shot	—	hadéel	pasang-bóodeel
knife	sooréeta	kahánáp	pisóh
canoe, or boat	ap	dëuá	sampán
rudder	—	duende-dol-deüá	—
shoe	kundróka	zapatos (corruption of Portuguese)	kasút, supátu
bread	pekó	puáng (Portuguese, pan)	roti
pipe, whistle	rípa	tanóp	hundchúe
to smoke	—	top-oomhói	asap
tobacco	tobacco	oomhói	tumbáko

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bamboo tobacco-box	oorán̈g	—	—
heaven	halyán̈g	oal, galahája	langéet
sun	tawúo	heng	mataharée
moon	chingát	kahaé	boolán
full-moon	sohó	—	—
star	tanoosamát	shokmaléicha	bintang
day	tahei	heng	tsará
night	átam	hatám	malám
darkness	sangóola	doochóol	bania-galáp
morning	haaréi	hagée	pagée
day after to-morrow	—	chayesláng	hiso-pagée-pagée
evening	haráp	ladiáyá	patang
summer (i. e. the dry or fine season)	talák	koi-kapa (N.E. monsoon)	poolan-nám
winter (i. e. the rainy season)	koomra	sohóng (S. W. monsoon)	barát
wind	koofótt	hash	angéen
lightning	nieïnáka	máit	kilát
thunder	koonróka	komtoogna	gooróh
rain	koomra	amà	oosán
clouds	talóol	galaháya	awán
east	—	hash-fooly	téemor
west	—	hash-soháng	barát
south	—	hash-láhhna	slatán
north	—	hash-kapá	ootára
fire	tamóia	hióye	ápee
to kindle a fire with bamboo	kiséit	—	—

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water	neak	dák	ajaír
salt-water	—	kamaléh	aja-masséen
sand	toomlát	péeèt	pasói
earth, land	panámm	oal-mattái	kampong
sea	máee	oal-kamaléh	aja-masséen
flood-tide	—	hayjáoo	ajáir-báh
ebb	—	tchóh	sooróot
river	tit-mak	hiajarák	soongwáy
valley	—	alhodá	lémba
hill	yógle	kohinjúan	boojétt (boo-kéett)
mountain, forest	koochiónn	—	boojétt-bassa
island	panám, poolgna	poolgna, mattái	póolo
stone, rock	chóng	mangáh	batóo
brass	mas	kalaháee	tamagá
iron	wert	kadáo	bacee, (bucee)
tree	kaha-chiónn	koy-unjéeha	atas-kayóo
wood	chiónn	oomnóeet	kayóo
leaf	droée-chiónn	da-unjéeha	daáeen-kayóo
bark	ook-chiónn	ok-unjéeha	coolie-kayór
grass	káee-op	oobjóoab	roombót
human flesh	aláha	—	—
flesh	kirinée	okaóoha	koolétt
pork	naoon	—	—
parrot	sakáha	katók	buron-baján nóri, kastóoree
maina (bird known as *Gracula Indicus*)	kachaláo	sichóoa	buron-tiónn
cocoa-palm	kahataóoka	oocejáoo	niónn
green cocoa-nut	taóoka	njáoo	nionn-mooda
ripe cocoa-nut	toowooáyka	gnoátt	massá

Name of object in English.	Dialect used in Kar Nicobar (called PUH by the natives). The most northerly island, 9° 10′ N., 92° 36′ E.	Dialect used in the Central Group, consisting of the islands of Nangkauri, Kamorta, Pulo Milú, Kondúl, and Lesser Nicobar.	Corresponding words used by the Malay inhabitants of Pulo Penang, 5° 25′ N., 100° 21′ E.
banana	tanióonga	hibóo	pisang
sugar-cane	lamóoa	—	tóoboo
yam	toltatchióng	—	koontang oobee-bóonggala
anana	—	choodóo	avanas
Carica-papaya	popáy	popáy	papáya
pandanus	—	laróhm	—
palm-wine (toddy)	—	doágh	tóoak
pig	—	not	babi
ape	ointchí	dooáeen-káeen	grah
dog	ahm	ahm	autchíng
cock	hayám	kamóoe-koep	ajam-tchantán
hen	kooan-hayám	kon-kamóoe / tschi-kamóoe	ajam-bootéena
rat	komét	—	tíkus
cat	koomeáo	—	kootchíng
serpent, snake	petsch	paéetya, toolán	ooláh
bird	tschi-aítchou	sitchúa	boorón
egg (generally)	óoha	hóoeeja	toolo
hen's egg	—	hóoeeja-kamóoe	tulo-ajám
dove	makóoka	moomóoh	pregám-moorpáti
fish	kah	gah	ikán
paper	—	láeeberi	kóortas
lead-pencil	—	anet-láeeberi	halam-téemah
key	—	tenooán	anak-kúntchi
chain	—	maláo	rantik
white	tesó	tenjéea	pootáy
black	turíng	óeel	itám
black coat	—	loaim-óeel	—
red	sakalátt	ak	máyra

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blue	turing	tchoongóa	kalabóo
dark-blue	turing	—	—
light-blue	tatóoka	—	—
yellow	tangáo	láaom	kooncéng
green	faiáll	tchoongóa	itchó
large	maróla	kadóo	loás
small	keejilóng	oompáeetche	kitchée
strong	takale-aláh	koáng	prat
old	mah	boomóoashe oomiáha	tóoa
young	neeáy	eelóoh	moodá
good	talácк	lapów	bagóoce
bad	atlácк	hadlapa	tabáee
pretty	talácka-kóoa	lapóa	báee
very beautiful	—	ilote-lapóa	bánia-báee
ugly	atlácka-koóa	jóoh	hang
living	atkáppa	ahn	deeáa
dead	kóopa	kapá	matti
cold	leejéet	kaáy	sitchóo
warm	wooang, or wáyee-low	keeojan	hang-át
I	teeóoa	teeóoa	sajá
thou	mough	mooáyh	aug
he	kna	ahn	deeá
we	—	teeóe	kéeta, kámi
ye or you	—	eefóe	augkáoo
they	—	eefoe-bajóo-óomtohm	dia-orang, or marikaéetoo
this	eenáy	neeáe or néena	seenee, eenee
that	oomóo	anáay	seetóo
all	rókayra	oomtóhm	samooáa
much	marónga	ootóhatche	baniá, baniák

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who?	akéea?	tchée?	sapaée? (seeáppa)
who is he?	—	tchick-ahn?	—
near	raáyta	meáyhoa	dakátt
distant	—	hóee	tchaó
very far	—	hóee-kah	—
to-day	taháee	lenheng	arynée, harée
yesterday	waháy	mandiój	koomaréen, klamaréen
to-morrow	hooráyeek	hakáyee	heéso (bisok)
yes	hoán	aón	ijá
no	draháwa	ooát	tidá
one	hang	hayáng	satóo
two	anátt	ah	dooá
three	lóoay	lóeh	téega
four	'fön	fooán	oompátt
five	tanáyee	tanáyee	léema
six	tafóol	tafoóel	njam
seven	sat	ishiátt	tootchó
eight	háware	oenfoán	lapánn
nine	matióotare	hayáng-hata	sambilán
ten	som	som	sibooló
eleven	kaook-séeen	som-háyang	sebeláss
twelve	áh-sien	som-áh	dooabeláss
thirteen	looay-sien	som-loáy	teejabeláss
twenty	kaóok-matiáma	heng-oomtchóma	dua-poolów
twenty-one	kaóok-matiáma-heng	heng-oomtchóma-heang	dua-poolów-satóo
twenty-two	kaook-matiama-anátt	heng-oomtchóma-ah	dua-poolów-duá
thirty	looay-kanyoo	heng-oomtchóma-toktay	tiga-poolów
forty	fön-kanyóo	ahm-oomtchóma	ampátt-poolów

Name of object in English.	Dialect used in Kar Nicobar (called PUH by the natives). The most northerly island, 9° 10′ N., 92° 36′ E.	Dialect used in the Central Group, consisting of the islands of Nangkauri, Kamorta, Pulo Milú, Kondúl, and Lesser Nicobar.	Corresponding words used by the Malay inhabitants of Pulo Penáng, 5° 25′ N., 100° 21′ E.
fifty	tanáyee-kanyóo	ahm-oomtchóma-toktay	léema-poolów
sixty	tafoól-kanyoo	looáy-oomtchóma	njam-poolów
hundred	heng-ohn	som-oomtchóma	saratooce
thousand	som-ohn	—	sirrybóo
to eat	niá	náok	makán
one who eats	—	oog-naók	—
to drink	kön	táoop	minoong
one who drinks	—	oog-taoop	—
to run	kayánn	deeánn	larée
to dance	küliám	katáoga	máaen, murari
to go	keerángary	tchoo	bigée
to grow slowly	att-kayán	—	—
to sing	tingócka	aekásha	magnánee
to sleep	loom	eetáyak	teedów
to speak	róa	olliówla	sakápp
to see	mooak	hadáh, oog-hadáh	tengo
to love	hanganlón	soojónghién	bánia-kesseéen
to kill	sap	oorrée	botón, boonóh
to cut one's self	—	ottáh	—
to sit	ratt	katö	doodó
to sit down	—	bóoja	—
to stand	talánn	ockshéeaga	badyrée
to come	jéehee	kaáytery	marée
to yawn	—	hengáp	móongwap
to laugh	—	itée	toortáwa
to weep	—	teeóom	moonángis
native stringed instrument (*see* p. 122)	—	dennang	—
areca-nut	tissáh	heejáh	pinang

Name of object in English.	Dialect used in Kar Nicobar (called PUH by the natives). The most northerly island, 9° 10′ N., 92° 36′ E.	Dialect used in the Central Group, consisting of the islands of Nangkauri, Kamorta, Pulo Milú, Kondúl, and Lesser Nicobar.	Corresponding words used by the Malay inhabitants of Pulo Penáng, 5° 25′ N., 100° 21′ E.
coral chalk	soonám	shónn	kapoor
betel-leaf	kooránia	hakáyee, aráy	sirée
tortoise-shell	kap	—	koolet-kará
fly	inlooáyee	jóoay	lapátt
mosquito	moosóka	mihója	njamó
feather or pencil	kanuítch	anet-láyeebery	kalám
wing	—	danówen	sajáp
name	minánee	lérmay	namáa
what is your name?	—	kin-lérmay	apa-namáa
weapon	hinwótt	hindéll	boodéel
cow-pox	mallóck	—	tcha-tchár
white man	isohokooa	bájoo-tatenn-hamátt	orang-bootáy
a Malay or yellow man	—	kolog-hamátt	orang-máyra
black man	—	taóln-hamátt	orang-itám
voyage or journey	—	johatáyha	blajárr
doctor	manlóoena	manlóoena	bornów
honey	—	—	lapáa
flute (*see* p. 122)	—	hinhell	bangsée

APPENDIX B.

VOCABULARY

(UPON GALATIN'S SYSTEM)

OF THE LANGUAGES OF THE NATIVES OF PUYNIPET ISLAND (CAROLINE ARCHIPELAGO) AND SIKAYANA, OR STEWART'S ISLAND.

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
man	ooléen	tanáta
apparel (men's)	koáll	—
men, people	aramáss	—
woman	lée	faféeny
apparel (women's)	lee-koóty	—
boy	tchirri-máoon	tamali-kirriky
girl	tchirri-páyni	tama-feény
father	paba	tamána
mother	nono	tinána
old man	—	tilui-tanáta
old woman	boóot	tama
son	—	aréeky
brother	reeágey	táeena
sister	reeágey-lee	káwe
workman or slave	aramáss-a-mal	—
head	—	debosoúlu
hair	—	ládóo
face	—	lofeé-máta
brow	—	móa-lái
ear	—	káootalina
eye	—	karimata
nose	—	kai-joosoo
mouth	—	móa-jóosoo
tongue	—	aláydo

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
tooth	—	nítcho
beard		bábaée
neck	—	teoówa
arm	—	léema
hand or finger	—	motikáo
nail	—	padde
body	—	fuáitino
belly	—	manáwa
thigh or leg	—	koonawáee
foot	—	sapoowáee
toes	—	motikáo-wáee
bone	—	táyeewee
heart	—	wagga-wagga
blood	—	tóto
village	—	takaeena
chief	tchobity	alikée
high-chief	tchobity-lappilap	—
a king	nanamaréeky	—
minister	nannekin	—
warrior	—	patooa
friend	—	tosóah
house, hut	nanoom	tamafálee
bow and arrow	katchin-kotáyoo	—
musket	kotcháck	—
cannon	kotchák-lappilap	—
spear	kotáyoo	—
saw	ratch-a-ratch	—
knife	kapoot	nife (Anglicé knife)
young bamboo	aleck	—
cocoa-palm	erring	nyóo
old cocoa-nut	erríng	mata-séelee
young cocoa-nut	páyeen	kamátoo
yam	kaáp	—
sugar-cane	katchin-tchóo	—

Object.	Puynipet, 6° 48′ N., 158° 14′ E	Sikayana, 8° 24′ 24″ N., 163° E.
bread-fruit	mahee	—
banana	oot	—
ginger	goonapella	—
food	moonga	—
rope	sháal	—
coral	paeena	—
reef	mát	—
ship's mast	kow	—
ship	tchob	—
main-sail	tcherrick	—
launch	wooárr	wakka
large ship, man-of-war	—	wakka-wakka
go, fetch me a canoe	kowa-golawata-ny-wooárr	—
small canoe	wooárr-madigadig	—
war-canoe	wooárr-ma-loot	—
shoe	—	takka
bread	—	papay (from papaya)
pipe	péepo	méety-méety
tobacco	—	tobacco
smoke	atee-niágey (? act of sternutation is intended to be expressed)	—
heaven	—	teláoo
sun	katerpin	teláh
the sun scorches (*sc.* the sun is evil)	katerpinban-kara-kara	—
moon	tschoonaboong	maláma
star	ootchoo	fatoó
day	—	trasonáyee
light	—	taeejáo
night	bong	tepóh
darkness	—	poóori-táoo

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
morning	raán	tapa-taeejáo
evening (little night)	—	afee-afee
wind	katchi-niang	—
lightning	—	wooéela
thunder	—	mána
rain	katow	tamakee-tayoówa
the rain approaches	katow-bankoto	—
basket	kiám	—
distilled spirit	jakó-ni-wáee	—
fire	katchiniagey	áfee
water	peéel	wooáee
hot water (also tea)	peéel-karakara	—
earth, land	tcháap	fanóoa
sea	nantchéet	wooáee-táee
hill	—	faka-maoona
island	—	tama-fanóva
stone, rock	tákee	fátoo
sand	pig	—
iron	—	keela
tree, wood	toóee *or* tóoka	lagáoo
sandal-wood	tooka-pomow	—
trepang	meneeka	—
red-trepang	lekapasina-menelka-witata	—
inferior sort	lognan	—
best sort	mayéen	—
black sort	matup	—
trepang split open	penapen	—
pearl-oyster	páee	—
flesh	—	tayéeho
human flesh	—	takéery
pig	piig (corrupted from the English)	—

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
dog	—	koorée
bird	—	looppi
egg	—	tafóoa
dove	móorie	—
domestic fowl	maleek	—
fish	maáam	éeka
fool	booy-booée	—
hat	tchoroóp	—
chisel	tcheela	—
flask	jug (English)	—
calabash	ay-júg	—
book	ay-tíng	—
box	koba	—
native cucumber	toor	—
apron	goál	—
fish-hook	katcheen-mata	—
musical instrument	katcháng	—
a liar	lakoompót	—
tortoise-shell	katchinipoot	masána
mosquito	—	namoo
name	—	koái-to-máre
what is your name ?	idiatoom ?	—
who are you ?	itch-kowa ?	—
voyage, journey	—	mamao
white	boot-a-boot	mah
white-man	oolyn-way	tamamáh
black	tintol	óoree
black-man	—	lama-ooree
red	witáta	ayóola
blue, green	—	ayóoee
yellow	—	kikana
great	lappiláp	naneéoo
small	madigidig	likée-likée
strong	—	faec-mafée

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
young	—	táaney
young man	—	tama-táaney
good	mamó	ayláooe
long	maréerie	—
short	mootamóot	—
old	—	matooa
far	maloóot	ma-máo
painfully alarmed	matchek	—
bad	metchiwate	fa-keeno-keeno
beautiful	katchilell	ayláosee
dead	metchilárr	koomátie
a dead man	hóni	—
bad odours	—	puraóo
ugly (bad)	—	fa-keeno-keeno
ill	tchoo-mo	áyeesoo
living	—	ayláooee
cold	—	makalili
warm	kara	mafána
hot	kara-kara	—
I, me	nej	enáoo
we	—	kohootóha
thou	—	akóee
he	—	támala
ye or you	noom	akoee
they	kowa	—
all	karootcheea	kohoo tóhoo
much, many	matóto	tama-kee
seldom	malólo	—
where ?	áya ?	—
who ?	—	sáya ?
who's there ?	—	sáya-táy ?
which	itch	—
what ?	ta ?	—
what does that cost ?	táa-ban-pyn ?	—

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
to-day	raánauit	tai-jáoo
this night	neeboong	—
near	—	taoo-preemáee
yesterday	eejáyo	na-náfee
long since	kelanáydgo	—
to-morrow	lo-koop	taya-sóakee
yes	—	oh
I know	nejereera-neekee	—
no	tchó	sáyaee
I don't know	nej-tyraneekee	—
how do you call this?	togata mett?	—
enough, that's enough	áare	—
there is no more	allatcher	—
fast	bit-a-bit	—
one	aáat	táahee
two	aáree	róoah
three	tchil	torah
four	abáng	fah
five	ayliéem	leemah
six	oán	ono
seven	etch	féetoo
eight	ewal	wároo
nine	atóooo	séewo
ten	katingóol etchak	katáwa
eleven	katingóol-aát	katáwa-táhee
twelve	katingóol-árée	katáwa-róoah
thirteen	katingóol-etchil	katáwa-tóra
twenty	ree-etchak	mata-róoah
thirty	tchil-etchak	mata-tórah
forty	pa-etchak	mata-fáh
fifty	lyeem-etchak	mata-léema
sixty	oán-etchak	mata-on
hundred	a-bóokie	lou
200	ree-a-bookie	róoah-lou

Object.	Puynipet, 6° 48′ N., 158′ 14′ E.	Sikayana, 8° 24′ 24″ N. 163° E.
300	tchil-abookie	—
1000	ket	kutaíoa-lou
5000	lyeem-a-ket	—
2,505	ree-a-ket-lyeem-a-bookie-elyéem	—
5,090	lyéem-a-ket-átoooo-etchak	—
4,440	pa-a-ket-pa-a-bóokie-pa-etchak	—
3,030	tchil-a-ket-tchil-etchak	—
9,740	atóooo-a-ket-etch-a-bóokie-pa-etchak	—
10,990	nóooo-atóooo-a-bookie-atóooo-etchak	—
to eat	namenám	káee
to drink	—	óonoo
to run	—	saéeray
to dance	—	anóo
to go	gota	anáaoo
to go ashore	gota-nancháp	—
to go up	gota-wáai	—
to descend	goti-wáai	—
I am going on board	—	anáoo-gafáno
I am going forward	ny-ban-tchoomeláa	—
whither go you?	go-leejáa?	—
go on!	hugo-wáai!	—
stand up!	hóota!	—
wait!	hooti-mas	—
sit down	mónti	—
lie down	wenti	—
to write or tattoo	ting	—
to sing	—	bésse
to sleep	meriláh	mói
to speak	kalang	tóka

Object.	Puynipet, 6° 48′ N., 158° 14′ E.	Sikayana, 8° 24′ 24″ N., 163° E.
to love	bukka-bukka	anáoo-fifái-kikaói
I do not love him	éekah	—
the dead	kumméla	leékie-teéa
It smells unpleasantly	—	poor-áoo
to steal	lyppiráp	—
to sit	—	nófo
to stand	—	anasáni
to come	tongata	—
come back !	broto	—
come here !	ky-to	—
to bathe	tóo-tu	—
to bring	wáta	—
to take	wá-waée	—
night-mare	loátch	—
to give	kiáng	—
give me	kitá	—
you are giving	kowa-kiáng	—

APPENDIX C. (p. 399.)

FORM IN SPANISH OF THE AGREEMENT ENTERED INTO IN DUPLICATE, CHINESE AND SPANISH, AND SIGNED BY EACH CHINESE EMIGRANT BEFORE LEAVING MACAO.

Nombre..... Provincia.....
Edad..... Profesion.....

Digo yo.....natural.....
en China, de edad de ..... años, que he convenido con Dn. F. Velez lo que se espresa en las clausulas siguientes:

1ª. Quedo comprometido desde ahora á embarcarme para la Habana en la Isla de Cuba en el buque que me señale dicho Señor.

2ª. Quedo igualmente comprometido y sugeto por el termino de ocho años á trabajar en dicho pais de la Isla de Cuba á las ordenes de la Sociedad la Colonizadora ó á las de la persona á quien traspasare este Contrato para lo cual la faculto, en todas las tareas alli acostumbradas, en el campo, en las poblaciones, ó en donde quiera que me destinen, sea en casas particulares, establecimientos de cualquiera clase de industria y artes, ó bien en ingenios, vegas, cafetales, sitios, potreros, estancias y cuanto concierne á las labores urbanas y rurales sea de la especie que fueren.

3ª. Los ocho años de compromiso que dejo contraidos en los terminos espresados en la clausula anterior, principiarán á contarse desde el octavo dia siguiente al de mi llegada al puerto citado de la Habana, siempre que yo llegare en buena salud, y desde el octavo dia siguiente al de mi salida del hospital ó enfermeria, caso de llegar enfermo ó incapaz de trabajar al tiempo de mi desembarco.

4ª. Las horas en que he de trabajar dependerán de la clase de trabajo que se me dé, y segun las atencinoes que dicho trabajo requiera, lo cual queda al arbitrio del patrono á cuyas ordenes se me ponga, siempre que se me dén mis horas seguidas de descanso cada 24 horas, y el tiempo preciso a demas para la comida y almuerzo, con arreglo á lo que en estas necesidades inviertan los de mas trabajadores asalariados en aquel pais.

5ª. Ademas de las horas de descanso, en los dias de trabajo, no podrá hacerseme desempeñar en los Domingos mas lavores que las de necesidad practicadas en tales dias segun la indole de los que haceres en que me ocupen.

6ª. Me sugeto igualmente al orden y disciplina que se observe en el establecimiento, taller, finca ó casa particular adonde se me destine, y me someto al sistema de coreccion que en los mismos se impone por faltas de aplicacion y constancia en el trabajo, de obediencia á las ordenes de los patronos ó de sus representantes, y por todas aquellas, cuja gravedad no haga precisa la intervencion de las leyes.

7ª. Por ninguna razon ó por ningun pretesto podré, durante los ocho años por los cuales quedo comprometido en este Contrato, negar mis servicios al patron que me tome, ni á evadirme de su poder, ni á intentarlo siquiera por ninguna causa, ni mediante ninguna indemnizacion, y para significar mas mi voluntad de permanecer bajo su autoridad en los limites que en este Contrato le doy, renuncio desde ahora el derecho de rescision de Contrato que otorgan á los colonos los Articulos 27 y 28 de las Ordenanzas sobre colonizacion promulgadas por S. M. la Reina Da. YSABEL 2ª en 22 de Marzo de 1854, y el que pudieran otorgarle cualquiera otra ley ó disposiciones que en lo sucesivo se publicasen.

8ª. En cuanto á casos de enfermedad convengo y estipulo, que si esta escede de una semana se me suspenda el salario, y que este no vuelva á correrme hasta mi restablecimiento ó lo que es igual, hasta que mi salud permita ocuparme en el servicio de mi patrono, no obstante el tenor de los Articulos 43, 44 y 45 del Reglamento citado, pues tambien renuncio al derecho que pudiesen otorgarme para ninguna otra ecsigencia que solo á fuerza de tramites costosos y largos pudiera llegar á justificarse ó á ser reprovada.

Dn. F. Velez se obliga poa su parte para conmigo:

1ª. Aque desde el dia en que principien á contarse los ocho años de mi compromiso, principie tambien á correrme el salario de cuatro pesos al mes.

2ª. Aque se me suministre de alimento cada dia ocho onzas de carne salada y dos y media libras de boniatas ó de otras viandas sanas y alimenticias.

3ª. Aque durante mis enfermedades se me proporcione en la

enfermeria la asistencia que mis males reclamen con los ausilios, medicinas y facultativo que mis dolencias y conservacion ecsijan fuere por el tiempo que fueren.

4ª. Aque se me den dos mudas de ropa, una camisa de lana y una frazada anuales.

5ª. Será de cuenta del mismo Señor y por la de quien corresponda mi pasage hasta la HABANA y mi manutencion á bordo.

6ª. El mismo Señor me adelantará la cantidad de ocho pesos fuertes para mi abilitation al viage que voi á emprender.

7ª. Tambien me dará cuatro mudas de ropa, colcha y de mas avios necesarios, cujo importe de pesos 4 con los de la clausula anterior hacen la suma de pesos doce, la misma que satisfaré en la HABANA á la orden de la SOCIEDAD LA COLONIZADORA con un peso al mes que se descontará de mi salario por la persona á quien fuere traspasado este Contrato, entendiendose que por ningun otro concepto podrá hacerseme descuento alguno.

DECLARO haber recibido en efectivo y en ropa segun se espresa en la ultima clausula la suma de pesos doce mencionados que reintegraré en la HABANA en la forma establecida en dicha clausula.

DECLARO tambien que me conformo con el salario estipulado, aunque sé y me consta es mucho mayor el que ganan los jornaleros libres y los esclavos en la Isla da Cuba, porque esta diferencia la juzgo compensada con las otras ventajas que ha de proporcionarme mi patrono, y las que aparecen en este Contrato.

Y en fé de que cumpliremos mutuamente lo que queda pactado en este documento firmamos dos de un tenor y para un solo efecto ambos contratantes en ..... á ..... de 18 .....

POR LA SOCIEDAD LA COLONIZADORA.

TRANSLATION OF THE FOREGOING.

Name ..... Province.....

Age ..... Business or occupation.

I, the under-signed..... born at ..... in China ..... years old, have entered into an agreement with Don F. Velez, upon the following conditions, viz.—

1. I engage from the date hereof to embark for the Havannah in the island of Cuba in whatever ship the before-mentioned gentleman may appoint.

2. I further promise and engage during the space of eight years to work in the said country of Cuba under the orders and regulations of the Colonization Society, or of the person to whom the present agreement may be assigned, and to perform all necessary agricultural labour in the settlement, or wheresoever I may be ordered so to do, whether in a private house or in any description of industrial enterprise, or in factories, in plantations, in coffee-gardens, at country seats, or on pasturage grounds, and generally all manner of labour, whether in town or country, of what description soever it may consist.

3. The eight years during which I bind myself to labour under the conditions specified in the last preceding paragraph shall be held to commence eight days after my disembarkation in the aforesaid harbour of the Havannah, it being always understood that I have been landed in good health, or else shall commence on the eighth day after my discharge from hospital, in the event of my having landed in ill health or incapable of working.

4. The hours during which I bind myself to labour shall depend upon the nature of the work which I shall be required to perform, and the degree of special attention which such work may require, or may be determined on his own responsibility by the master under whose orders I may be placed, provided always that I am permitted to enjoy certain hours of repose during every 24 hours, and certain fixed periods for breakfast and dinner, similar to those assigned to other paid labourers in that country.

5. Besides my hours of rest and recreation during work days, I shall not be bound to do any work upon Sundays, beyond such necessary labour as may seem to be requisite in the opinion of my employer or employers.

6. I also bind myself to submit to the orders and discipline which may be in force in the house of business, farm, or private house in which I am employed, and further agree that I shall be amenable to such *system of punishment* as may be in force in such localities for the correction of indolence, absence from work, disobedience to the orders of any em-

ployers or their agents, as also for all such minor offences as may not call for the intervention of the law.

7. On no account whatever, and under no circumstances, shall it be lawful for me during the aforesaid period of eight years for which I hereby bind myself, to absent myself from my employer's service, or to withdraw or escape from his authority, or under any circumstance or under any provocation to complain against him, and in order to render more binding upon me this declaration of my voluntary obedience to all these provisions, I *renounce* from the date of the present subscription the right to rescind the provisions of this contract secured to emigrants by articles 27 and 28 of the ordinances on colonization promulgated by H. M. Queen Isabella II., 22 March, 1854, as also any similar rights that may be secured to emigrants by any laws or official documents published or to be published in reference thereto.

8. In case of sickness or infirmity I agree and declare that I fully consent that if such illness shall exceed one week in duration, my wages shall be stopped, and shall remain suspended until my recovery, or, which is the same thing, until such time as my health permits me to re-enter the service of my employer, without having recourse to the articles 43, 44, and 45 of the aforesaid regulations, my rights under which I forego by the last preceding paragraph, and do again *renounce*.

Don F. Velez for his part engages with me:—

1. That from the day on which my said term of eight years' service begins, my wages shall be paid at the rate of four Spanish piastres monthly.

2. That there shall be provided me daily eight ounces of salt meat and two and a half pounds Boniatas (*Jatropha Manihot*), or other equally good and nutritious food.

3. That in the event of illness I shall be provided in the hospital with such things as my case may require, and in particular with all medicines, &c., necessary to restore me to health, so long as my illness may last.

4. That I shall be supplied annually with two pairs of trowsers, one woollen shirt, and one woollen coat.

5. That my passage to the Havannah and maintenance while on

board shall be defrayed at the expense of my employer or his agent or representative.

6. That my employer shall further pay me eight dollars in order to enable me to provide necessaries for the said voyage; and further,

7. That he shall provide me with four pairs of trowsers and a coverlet, the same not to exceed four dollars, making with the preceding the sum of 12 dollars, which 12 dollars I bind myself to repay to the order of the Colonization Society, by means of a monthly instalment of one dollar paid by the person with whom my labour shall be contracted for, but upon the further condition that no other deduction whatever shall be made from my said monthly pay.

I hereby declare that, in conformity with the preceding paragraph, I have received by way of cash advance and in clothing the equivalent of the said 12 dollars, which, as already stipulated, shall be repaid by me at the Havannah.

I also declare that I am perfectly satisfied with the aforesaid payment, although I am aware, and it is well known, that the free labourers, as also the negro slaves, in the island of Cuba, are paid a much larger wage. But I consider myself recompensed for this difference by the other advantages which my employer binds himself to secure to me, and which are set forth in the present contract. And in witness that we on either side engage that the provisions hereof shall be duly and faithfully carried out, we subscribe on that behalf two copies of similar purport this ..... day of .....18.....

For the Colonization Society, ...

Signature of emigrant, ...

APPENDIX D. (pp. 539—548).

DESCRIPTION OF THE TYPHOON ENCOUNTERED IN THE CHINESE SEAS, BY H. I. R. M.'s FRIGATE NOVARA, ON THE 18TH AND 19TH AUGUST, 1858.

The path of the typhoon has been deduced from comparison with the readings of the barometer, with which it corresponds pretty accurately, if due allowance be made for the fact, that in determining it the various directions in which the line of centres runs must be calculated on the supposition that the orbit of the cyclone is circular, which it is not in reality, since at any considerable distance from the centre it must be elliptical. Hence it is apparent that the rate of velocity of the cyclone in advancing along its path follows no fixed law, whereas some such regularity undoubtedly exists among the masses of air encountered by the cyclone. Hence too the errors thus made in specifying the direction of the wind become of considerable importance in this connection, more especially in the event of the place of observation being at any distance from the centre, or that the path of the cyclone forms a sharp angle when wheeling round. Moreover, as actually experienced, the path of the typhoon would lie more near the line of the points of observation than a sketch founded upon such observations would indicate, and than a general comparison of the paths of cyclones founded upon the theory of their gyratory motion would substantiate, except in those cases where the observer has been directly in the path of the cyclone.

In our case the absolute distances, as specified in the annexed table (see p. 490) of fifteen different stations taken during the three days during which the cyclone and its premonitory and subsequent symptoms lasted, are only assumed, because simultaneous observations of the varying directions of the wind could not be taken at various points of the course of the cyclone, and in so far may be inaccurate, although the relative distances might possibly be tolerably correct.

The observations as to the direction of the wind at noon of the 18th August and at the ensuing midnight, give results contradictory to the

theory, since the wind in both cases is almost the same as would at midnight of the 19th indicate a central point, falling actually behind that portion of the path of the line of centres already traversed on the 18th. Upon this showing the direction of the wind at 6 P.M. of the 18th may be assumed as that of the centre of the cyclone. In fact, the path of the cyclone at this point lay parallel with the course the ship was holding, whence only trifling variations would be observable in the direction of the wind at those periods. Besides, the cyclone was at that time approaching the vertex of its orbit, in doing which it encountered the large and tolerably lofty island of Okinawa-Sima of the Loo Choo group, which must have resulted in a certain expenditure of the force causing the gyratory movement of the cyclone. In analyzing the path of the cyclone, account must also be taken of the winds that prevailed from the 17th August up to midnight, although these are to be considered, with respect to the cyclone proper, only in so far as they were winds that had been altered in direction at the origin of the typhoon in conformity with the laws of cyclones, which by no means imply in all cases a perfect gyration. However, as these winds are varied in direction by the same causes which are in full activity in the case of the cyclones, such variations must follow the same laws, and the lines of centres which present themselves with reference to these as parts of a circular orbit, naturally lie in the same direction as that of the cyclone at its origin.

As early as the 13th August a marked alteration in the temperature of the air had been perceptible at Shanghai; the thermometer fell from between 86° and 95° Fahr. to between 73°.4 and 78°.8 Fahr.: easterly breezes set in, and the barometer rose in a remarkable manner for that latitude and season. On the 17th the weather was still fine, but the sun set red and fiery behind a dense mass of clouds.

The morning of the 18th broke with continued fine weather; but cumulous clouds were massed on the sky, and looked black and threatening to the N.E. By 8 A.M. the wind and sea had both risen materially. By 3 P.M. the roll of the sea was from N. by E., the sky became still more cloudy, and the clouds began to descend; banks of clouds in the direction of the central point. At midnight between the 18th and 19th altered course to W. by S., in order to run out of the cyclone by reaching its southern edge.

On the 19th at 8 A.M. a heavy sea from the northward, the sky a dense mass of clouds with very limited horizon; the whole aspect of the heavens a grey misty wrack of clouds, gradually falling lower and lower,—only in the direction of the central point was there visible a gloomy, leaden-coloured segment of clear horizon. From 4 P.M. to 8 P.M. the clouds completely enveloped us, so that it was barely possible to descry an object a cable's length from the ship; constant gusts of wind with fine rain or sea-spray; very heavy sea from the west, but the waves fairly decapitated by the wind as fast as they rose. By 11 P.M. a few dark clouds became visible in the S.S.E., and the horizon began to widen again.

20th. The sky still covered; in the west, white parallel bands of clouds, forming segments of circles: the masts and rigging covered with a crust of evaporated salt.

17th August.

Hours from midnight to midnight.	Mean pressure of atmosphere.	Direction of wind.	Strength of wind 0 to 10.
1	29.908	S.E. $\frac{3}{4}$ E.	3.5
2	.912	S.E. by E. $\frac{1}{4}$ E.	3.5
3	.915	S.E. by E. $\frac{1}{4}$ E.	3.5
4	.917	S.E. by E. $\frac{1}{2}$ E.	2.5
5	.914	S.E. by E. $\frac{1}{4}$ E.	2.5
6	.913	E.S.E.	2.5
7	.909	S.E. by E. $\frac{3}{4}$ E.	2.5
8	.899	E.S.E.	3.
9	.886	S.E. by E. $\frac{1}{2}$ E.	3.
10	.878	E. by S. $\frac{1}{4}$ S.	3.
11	.869	E. $\frac{3}{4}$ S.	3.
12M.	.860	E. $\frac{1}{4}$ S.	3.
1	.852	E. $\frac{1}{2}$ S.	3.5
2	.853	E. $\frac{1}{2}$ S.	3.5
3	.848	E.	3.2
4	.834	E. $\frac{1}{2}$ N.	4.
5	.817	E.N.E.	4.

17th August, *continued.*

Hours from midnight to midnight.	Mean pressure of atmosphere.	Direction of wind.	Strength of wind 0 to 10.
6	29.808	E.N.E.	4.
7	.810	N.E. by E. $\frac{1}{4}$ E.	4.
8	.812	N.E. by E. $\frac{1}{4}$ E.	3.5
9	.812	N.E. by E.	3.5
10	.806	N.E. by E. $\frac{1}{2}$ E.	3.5
11	.795	E.N.E	3.5
12	.784	E.N.E.	3.5

18th August.

1	29.779	E. by N.	3.5
2	.771	E. by N.	3.2
3	.762	E. by N.	3.2
4	.758	E. by N.	3.2
5	.751	E. by N.	3.5
6	.740	N.E. by E. $\frac{1}{2}$ E.	3.5
7	.721	N.E. by E.	4.
8	.696	N.E. by E.	4.5

18th August, *continued.*

Hours from midnight to midnight.	Mean pressure of atmosphere.	Direction of wind.	Strength of wind 0 to 10.
9	29.666	N.E. by E.	5.
10	.640	N.E.	5.2
11	.612	N.E. $\frac{1}{2}$ N.	5.7
12 M.	.581	N.E by N.	6.5
1	.548	N.E. by N. $\frac{1}{2}$ N.	5.
2	.526	N.E. by N.	6.5
3	.503	N.	7.5
4	.482	N. by E.	7.
5	.459	N.E. by N.	7.5
6	.435	N.E. by N.	8.
7	.421	N.E. by N.	8.
8	.411	N.E. by N.	8.
9	.408	N.E. by N.	8.
10	.405	N.E. $\frac{3}{4}$ N.	8.5
11	.401	N.E. $\frac{1}{2}$ N.	8.7
12	.375	N.E. $\frac{1}{2}$ N.	8.7

19th August.

1	29.306	N.E. by N.	5.7
2	.319	N. by E.	8.
3	.335	N. by E.	7.
4	.351	N.	7.5
5	.364	N. $\frac{1}{2}$ E.	7.2
6	.376	N.	7.2
7	.383	N. by W.	6.5
8	.376	N. by W. $\frac{1}{2}$ W.	7.2
9	.361	N.N.W.	7.7
10	.347	N.N.W.	8.

19th August, *continued.*

Hours from midnight to midnight.	Mean pressure of atmosphere.	Direction of wind.	Strength of wind 0 to 10.
11	29.324	N.W.	8.
12 M.	.295	N.W.	8.
1	.268	N.W. $\frac{1}{2}$ W.	7.7
2	.252	N.W. by W.	7.5
3	.238	N.W. by W.	7.7
4	.223	N.W. by W $\frac{1}{2}$ W.	7.7
5	.220	W. by N. $\frac{1}{2}$ N.	8.
6	.221	W. by N. $\frac{1}{2}$ N.	8.
7	.225	W. by N. $\frac{1}{2}$ N.	8.
8	.229	W. by N.	8.5
9	.233	W.	8.5
10	.243	W.	8.5
11	.256	W.	8.5
12	.282	W. by S.	9.

20th August to noon.

1	29.351	W. by S. $\frac{1}{2}$ S.	9.
2	.363	W. by S.	9.
3	.375	W. by S.	9.
4	.413	W. by S.	9.
5	.437	W.S.W.	7.5
6	.457	S.W. by W.	7.
7	.457	S.W. $\frac{1}{2}$ W.	6.
8	.471	S.W.	6.
9	.489	S.W. $\frac{1}{2}$ S.	6.5
10	.505	S.W. $\frac{1}{2}$ S.	6.5
11	.512	S.W. $\frac{1}{2}$ S.	6.5
12M.	.515	S.W. $\frac{1}{2}$ S.	6.5

The barometric readings are corrected to the freezing-point density of the atmosphere, as also to the level of the ocean, and are further reduced by comparison with the Standard Barometer at the New Observatory.

They are also relieved of a source of error arising from the regular decline for each day of the barometer, as evidenced by the observations made during June and July, 1858, in mean latitude 23° 52′ N., mean longitude 119° 12′ E. This downward tendency will be apparent from the following readings for each hour:—for 1h. (A.M.) — 0.004, 2h. + 0.005, 3h. + 0.0012, 4h. + 0.015, 5h. + 0.012, 6h. + 0.006, 7h. — 0.02, 8h. — 0.012, 9h. — 0.021, 10h. — 0.02, 11h. — 0.018, noon — 0.015, 1h. — 0.008, 2h. + 0.007, 3h. + 0.021, 4h. + 0.025, 5h. + 0.023, 6h. + 0.015, 7h. + 0.008, 8h. — 0.001, 9h. — 0.008, 10h. — 0.014, 11h. — 0.015, 12h. (midnight) — 0.011. These quantities are to be read as implying that when added to or deducted from those supplied by actual observations, they result in the quantities already assigned as the corrected averages for the day. The direction as well as strength of the wind are copied from the averages as calculated by the Commodore from the ship's log, the meteorological journals and the daily postings made by the Commodore himself.

According to the delineation of the path of the cyclone, as prepared from the observations recorded, the following table already, referred to, gives the approximative distance of the ship at stated points from such central path, as compared with that deduced from barometrical observations, allowing for the differences already mentioned. In the case of the wind-pressure, the average is deduced from the mean of successive observations taken every hour, and for the most part divided into intervals of three hours each.

			Distance.	Air-pressure.	Difference.	Distance according to curve.
1	17th August	4 A.M.	336	29.915 in.		336
2	,, ,,	noon.	297	.860	0.055	300
3	18th ,,	midnight.	265	.783	.132	257
4	,, ,,	6 A.M.	230	.736	.178	233
5	,, ,,	9 A.M.	205	.667	.248	205
6	,, ,,	6 P.M.	153	.438	.477	153
7	19th ,,	3 A.M.	140	.335	.580	138
8	,, ,,	5 A.M.	148	.364	.551	142
9	,, ,,	8 A.M.	146	.373	.542	143
10	,, ,,	noon.	125	.296	.619	130
11	,, ,,	3 P.M.	123	.238	.677	122
12	,, ,,	6 P.M.	134	.222	.693	138
13	,, ,,	9 P.M.	148	.235	.680	144
14	20th ,,	midnight.	183	.296	.619	183
15	,, ,,	6 A.M.	313	.450	.465	313

The minimum pressure according to the curve would be 28.975, but must actually have been less. According to the strict reading it would result that all radii before reaching the point where nearest the central path, as also all those in the same half-circle after such central line has been crossed, should have the same value, whatever the direction, which if rigidly asserted cannot be correct, since the motion of a cyclone is truly circular only in the immediate vicinity of its central point. As that point is receded from, the motion becomes more or less elliptical, as is attested by the barometric differences, which had the cyclone been a true circle in all its parts ought to be similar for similar distances. This it is admitted is not the case, as the barometric pressure shows a marked decline in the earlier part of a cyclone the more rapidly the central line is approached, just as it rises again once that line has been passed.

For this reason the distances as assigned upon a line of curves deduced from the foregoing observations must be too great, especially those which are calculated at right angles to the path of the typhoon, because perpendiculars drawn at right angles to the varying directions of the wind must intersect each other at points more distant than the actual central point of the cyclone itself.

To the foregoing may be appended a few extracts recounting the damage done by the great typhoon of 27th July, 1862, from which some idea may be formed of the tremendous violence and destructive effects of this description of atmospheric agency.

From London and China Telegraph, 29th Sept., 1862.

"A dreadful typhoon occurred at Canton on 27th July, 1862. The destruction of life and property is immense, the loss of life in the city and neighbourhood being estimated at about forty thousand. In the telegram which was received a few days ago announcing this event, a query was placed, and very reasonably, after the number stated; but the press state that as far as inquiries have been made at present it is probably correct. The loss of life has chiefly occurred amongst the junk population, and the fine new fleet of forty Imperial junks, intended for the Yang-tse-kiang, has been destroyed. The water rose till the streets of Honam had three feet in them, but the buildings suffered less than might have been expected; some two or three hundred feet of the granite

wall at Shameen was washed away, and blocks of stone were driven about as if they had been billets of wood; houses in the city had also been blown down, and trees rooted up; the rice crops have suffered severely; and the total damage may be estimated in millions of dollars. Mr Gaillard, an American Missionary, was killed by the falling in of his house; and the residences of the Rev. Messrs. Bonney and Piercey were thrown down, a large junk having been driven up against them. At Whampoa the docks were all flooded, while the workshops attached were unroofed and otherwise injured. From the *China Mail*, which gives a long and graphic description of this disastrous visitation, we extract the following:—'The British brig *Mexicana* capsized in Hall and Co.'s dock, and lies on her beam-ends; the British ship *Dewa Gungadhur* is lying on her side in Gow and Co.'s dock; the British steamer *Antelope*, in the Chinese dock at the corner of Junk River, has her bow run up over the head of the dock, and her stern at an angle of thirty degrees into it; the British steamer *Bombay Castle* was washed off the blocks in Couper's wooden dock, and was scuttled by her captain to save her from being floated out of the dock; the American ship *Washington* is aground, blocking up the entrance to the Chinese dock in Junk River; the American ship *Jacob Bell* and British barque *Cannata* are high on a mud flat, dry at low water—the latter making water, and discharging her cargo; the new British steamer *Whampoa* broke from her moorings and went ashore, but has since been got off without injury. Several chops sunk, and five of the foreign Customs' inspectors were drowned. Many junks went down with all hands. Bamboo-town is entirely destroyed, the water having flooded it to the depth of six feet, and swept off a great number of its inhabitants. It is greatly to be feared that the disasters among the shipping outside will prove something frightful, and that many vessels now anxiously expected have either been driven on the rocks and gone to pieces or have foundered at sea. Already, it will have been observed, one dismasted vessel, the Danish brig *Hercules*, has come in; and more may be looked for in the course of the next fortnight. The *Iskandershah* is on shore in the river, close to Tiger Island, a little above the Bogue.' One writer says the city looks just as it did after the bombardment by Admiral Seymour, and that there has not been such a typhoon since 1832.

"The typhoon which visited Canton so severely also committed great ravages at the port of Macao. The loss of life was very great. Many junks were sunk or driven ashore, and their crews drowned. The *Chilo*, a British ship engaged in the rice trade, went ashore, and is a total wreck; and another vessel was also reported lost. The wharves have suffered severely, and houses were blown down. A letter, dated 28th July, says:—'Yesterday morning a very strong typhoon did a great deal of damage here. The new sea wall on the Praia Grande stood it well, except in one place; but the old one, which has stood so many typhoons before, is now nearly entirely broken down; also Messrs. De Mello and Co.'s wharf. Some houses have come down, and trees on the Praia and other places have lost nearly all their branches. The British barque *Chilo* got ashore outside, and has parted amidships; about 100 piculs copper cash have been saved from her cargo. The steamer *Syce* is ashore in the inner harbour, but without damage. A good many junks and boats have capsized or been dismasted, and a great many lives lost. The appearance of the Praia Grande after the typhoon was really astonishing. We had a very short notice or indication of a typhoon. On Saturday night the wind commenced to blow from N.E., but not before Sunday morning, about a quarter past four, did the barometer go down, and it stood at 8 A.M. at 28.60; thermometer 81. At about 10 A.M. it was blowing hardest from S.W., and caused the greatest damage.'"

APPENDIX I. (p. 13.)

The following reprint (by permission) from the columns of the "Spectator" of 11th Oct. and 25th Oct., 1862, *conveys so accurate an idea of the achievements of the gallant and lamented Burke and Wills, and of the mismanagement that led to their disastrous fate, that no apology is needed for inserting it here.*

THE AUSTRALIAN EXPLORING EXPEDITION OF 1860.*

(*Spectator, 11th and 25th Oct.*, 1862.)

"THOSE who are interested—and who is not?— in the history of the latest and most successful of Australian exploring expeditions will find the principal materials requisite for the satisfaction of their curiosity in the small volume now before us. The special interest attaching to this particular expedition lies in the striking contrast which it presents between the perfect success of its leaders and their melancholy end. Having accomplished their arduous task of traversing the Australian continent from south to north, Messrs. Burke and Wills returned to their starting-point, only to find that the dépôt which they had established there had been abandoned by their companions less than twelve hours before their arrival. Utterly broken down by privation and fatigue, and disappointed of the succour on which they had confidently relied, they were unable to traverse the comparatively trifling distance which separated them from the settled districts, and, after some weeks of hopeless wandering, they were literally starved to death when almost within sight of aid. The story of these few weeks, as contained in the scanty records left by Messrs. Burke and Wills, and in the statement made by their sole surviving companion, is one of the most touching narratives of human fortitude that we have ever met with. The feeling of sympathy, almost painful in its intensity, which it necessarily excites, is immediately followed by a desire to ascertain the precise quarter in

* *Robert O'Hara Burke, and the Australian Exploring Expedition of* 1860. By Andrew Jackson. London: Smith, Elder, and Co.

which the gross neglect which alone could have rendered such a catastrophe possible can justly be charged. It is to this point that we propose mainly to direct the remarks which we have to make on Mr. Jackson's volume; and we shall recapitulate the history of the expedition only so far as is absolutely necessary to render our observations generally intelligible.

"The exploring party left Melbourne on August 20, 1860. It was accompanied by a number of camels, which had been imported for the purpose, on the supposition that these animals would be peculiarly fitted to bear the privations incidental to such a journey. The party was headed by Mr. Robert O'Hara Burke. Mr. Landells, who had charge of the camels, was second in command; and the third officer was Mr. William John Wills, who also acted as astronomical and meteorological observer to the expedition. On September 23 they reached Menindie, on the Darling river, about 400 miles from Melbourne. Here Mr. Landells, in consequence of some disagreement with Mr. Burke, resigned his post; and Dr. Beckler, the medical officer to the expedition, declined to go any further. Hereupon Burke appointed Wills in Landells' place, and divided his party, leaving one section at Menindie, in charge of Beckler, while he, with Wills and six others, pushed on, on October 19, for Cooper's Creek, about 400 miles further north, under the guidance of one Wright, a man acquainted with the country, whom he met with on the spot. On October 31, when about half-way between Menindie and Cooper's Creek, Burke appointed Wright third officer, and sent him back to the Darling, with instructions to bring up the remainder of the party and stores to Cooper's Creek without delay. He then pushed on, and reached the Creek on November 11. He remained here about a month, and then again divided his party. Three men, six camels, and twelve horses were left at the dépôt on the Creek, under the command of Mr. Brahé, whose instructions were to remain till Burke's return, or until he was forced to retreat by want of provisions. Burke started on December 16, taking with him Wills, King, and Gray, six camels, one horse, and provisions for three months, which was the time he expected to be absent; but he told Brahé that he might be away four months, or even more. On February 11, 1861, he reached a point only a few miles from the shore of the Gulf of Carpentaria, and thus accomplished his

mission of entirely crossing the Australian Continent from south to north. He at once retraced his steps, and arrived at the dépôt in Cooper's Creek on April 21, accompanied by Wills and King, Gray having died a few days before. They found that Brahé had quitted his post that very morning, and started for the Darling, leaving some provisions buried at the foot of a tree, on which he had cut an inscription indicating the fact. The exhausted explorers debated what they had best do. Wills and King wished to make for Menindie; but Burke, thinking that, weak as they were, it was hopeless to try to overtake Brahé, decided to push for the nearest settled districts of South Australia, distant about 150 miles. This they did on April 23, having left a note in Brahé's *cache*, but without adding anything to his inscription on the tree, or leaving any distinct intimation that they had ever been there. But the enterprise was beyond their strength. They were so weak that they could not advance more than five or six miles a day; their camels knocked up, their provisions ran short; and, finally, Burke died on July 1st, Wills having succumbed a day or two earlier. King, the sole survivor, fell in with the natives, who treated him kindly; and he was rescued on September 15th by a party sent from Melbourne in search of him, under the guidance of Mr. Howitt.

"We must now return to Mr. Wright, and see how he carried out the instructions given him by his chief. Mr. Burke, as we have already said, sent him back to Menindie on October 31, 1860; and he reached that place on November 5. Here, in the teeth of Burke's orders to bring the rest of the party on to Cooper's Creek *without delay*, he remained inactive until January 26, 1861, when he appears to have moved northward. He never, however, got further than Bullo, a place about sixty miles south of Cooper's Creek, where Mr. Brahé fell in with him on April 29, and at once placed himself under his orders. Two days later Wright left Bullo, and moved a few miles further south, "not seeing the utility of pushing on the dépôt to Cooper's Creek for the purpose of remaining there the few weeks their stores would last." On May 3, at Brahé's suggestion, Wright and he returned to the dépôt on Cooper's Creek, taking no stores with them. They remained there a quarter of an hour, did not examine the *cache*, and then, seeing no signs of Burke having been there, rejoined the rest of their party, and made their way

back to the Darling, whence Brahé at once proceeded to Melbourne. On hearing his report, the Exploration Committee lost no time in despatching the relief party, under Mr. Howitt, which, as we have already said, discovered King in the following September.

"After the foregoing brief summary of the facts of the case, the reader will probably have but little difficulty in coming to the conclusion that the death of Messrs. Burke and Wills was, in great measure, owing to Mr. Wright's having so unaccountably neglected to obey the distinct instructions of his chief. Mr. Jackson, indeed, holds that no one but Wright was at all to blame in the matter. Nay, he even goes so far as to accuse Wright of having wilfully and deliberately left the leaders of the expedition to a fate which he must have known would be the natural result of his inaction. 'Can any reasonable person,' he asks, 'doubt that Wright knew perfectly well the exact nature of his instructions, and foresaw the disastrous consequences almost certain to ensue should they be disregarded.' This very serious charge is based upon a passage in a despatch from Mr. Wright to the Exploration Committee at Melbourne, dated Dec. 19th, in which he says:—'As I have every reason to believe that Mr. Burke has pushed on from Cooper's Creek, relying upon finding the dépôt stores at that water-course upon his return, there is room for the most serious apprehensions as to the safety of himself and party, should he find that he has miscalculated.' This passage seems at least to prove that Wright had fully comprehended both the meaning and the object of the instructions he had received, *to return to Menindie, and bring up the stores as rapidly as possible to Cooper's Creek.* In the teeth of these positive orders he remained at Menindie no less than eighty-two days, from Nov. 5th, 1860, to Jan. 26th, 1861, doing literally nothing at all. There was, as far as we can see, nothing to prevent him from reaching Cooper's Creek with a portion of the stores before the end of 1860. The distance from Menindie to the Creek is about 400 miles, and Mr. Burke had traversed it without difficulty in twenty-three days. When Burke left Cooper's Creek on December 16th, he was in daily expectation of Wright's arrival. Had this reasonable expectation been fulfilled, there would then have been no reason why Brahé should not have remained at the dépôt for six months, or even a longer time. Wright appears to have spent a considerable portion of the time which he wasted at Menin-

die in making trips to see his wife and family, who were at a station about twenty-one miles off, being troubled with fears that they would not get safely and comfortably to Adelaide, whither he wished to send them. The explanation by which he subsequently endeavoured to account for his delay was anything but satisfactory. In the despatch already referred to, dated Dec. 29th, he alleged that he 'delayed starting merely because the camels left behind by Mr. Brahé were too few in number, and too inferior in carrying powers, to carry out a really serviceable quantity of provisions.' When, however, he was examined by the Commissioners appointed to inquire into the affair, he stated that he remained at Menindie because he was waiting for the confirmation of his appointment as third officer. When pressed to reconcile these two statements, and reminded that, unless he could do so satisfactorily, he 'stood in an awkward position before the Commission,' he made no reply. When at last he did set out from Menindie, we have seen that he advanced no further than Bullo, where he was joined by Brahé on April 29th. In explanation of this circumstance, he urges that Burke had left Menindie at a favourable season, when water was abundant; while when he started the advance of summer had dried up all the water-courses, and the ravages of scurvy had reduced the effective strength of his party to an alarming extent. This statement is, no doubt, substantially true; but we need hardly observe that it rather aggravates than extenuates his offence. Since he was well acquainted with the country, and knew that the advance of summer would immensely increase the difficulty of traversing it, he is all the more inexcusable for not having attempted the journey before the hot weather set in. When, after having been joined by Brahé, he paid a final visit to Cooper's Creek, the careless manner in which he conducted the search almost drives us to the conclusion that he was completely indifferent to its result. It was at Brahé's suggestion that he went back at all. Then though both he and Brahé were mounted, and were accompanied by a spare pack-horse, he did not, although the contingency of finding Burke's party was the sole object of his journey, attempt to provide for it by taking with him any stores of any kind. On reaching the dépôt, he stayed there only a quarter of an hour, and then, having failed in that time to discover any trace of Burke's party, at once turned his back on

the Creek. It is scarcely possible to imagine how, under such circumstances, he could have omitted to examine the *cache* made by Brahé a few days before, in which case he would have discovered that Burke's party had returned to the Creek, and would have learnt the direction in which they had gone. When questioned on this point by the Commissioners, he replied that he had noticed traces of natives about the place, and feared that if he disturbed the ground where the stores were hid they would see that something was buried there, and would plunder the *cache*. He 'had not the presence of mind,' he went on, to add any mark of his own to the inscription which Brahé had cut upon the tree. He seems, in fact, to have been thoroughly sick of the whole business, and to have thought of nothing but getting back to the settled districts with all possible speed.

"We must now inquire what amount of blame can be fairly attached to Mr. Brahé, whose departure from Cooper's Creek was the immediate cause of the melancholy end of Messrs. Burke and Wills. He appears to have received instructions to remain at the Creek until the return of Burke's party, or, at any rate, until the failure of his provisions obliged him to retreat. Burke fixed three months as the probable duration of his absence; but Wills seems to have impressed upon Brahé that it was quite possible they might have been away for at least four months. Brahé did actually remain there more than four months—from December 16th to April 21st;—but he left before he was absolutely compelled to do so. Even supposing him not to have overrated the supply of provisions necessary to carry his party back to the Darling, he could clearly have remained until he had consumed the stores which he left behind him at the Creek. But we must not forget that he was placed in a very difficult position. One of his companions was dangerously ill, and had for some time beset him with entreaties to return to Menindie; and all his party seem to have thought it very doubtful whether Burke would return that way at all. In Brahé's diary, on April 18th, we find the entry, 'There is no probability of Mr. Burke returning this way.' Here the observation suggests itself that, had this been his real conviction, there was no occasion for him to deprive himself of the stores which he left behind him. Mr. Jackson points out that the letter left by Brahé in the *cache* at the Creek did not give a true account of the condition of

his party. In it Brahé said that they were all quite well except one, and that the camels and horses were in good working condition. It was this intelligence which induced Burke to decide to make a push for South Australia. Had he known that Brahé's party, both men and beasts, were really in a weak and exhausted state, as the slowness of their rate of progression appears to prove, he would probably have decided to follow in their track. Since Brahé was under Wright's command at the time of their final return to Cooper's Creek, the lamentable carelessness which, as we have already said, was displayed on that occasion, cannot fairly be laid to his charge. It is almost impossible for us, with the full knowledge of all the circumstances which we now possess, not to allow our judgment to be influenced by the fact that, if Brahé had postponed his departure for a few hours only, the melancholy catastrophe would not have occurred. If, however, we wish to judge him fairly, we must not forget that this is a fact of which, at the time of his departure, he was necessarily ignorant. On the whole, we are inclined to agree with the verdict pronounced in his case by the Commissioners who were appointed to inquire into the affair. 'His decision,' they say, 'was most unfortunate; but we believe he acted from a conscientious desire to discharge his duty, and we are confident that the painful reflection that twenty-four hours' further perseverance would have made him the rescuer of the explorers, and gained for himself the praise and approbation of all, must be of itself an agonizing thought, without the addition of censure he might feel himself undeserving of.'

"We have now to inquire into the manner in which Mr. Burke discharged his duties as leader of the expedition, with a view of ascertaining whether its melancholy termination can, in any degree, be traced to any fault, whether of omission or of commission, on his part. If we are willing to submit ourselves absolutely to Mr. Jackson's guidance, we may, indeed, spare ourselves this trouble; for he asserts most distinctly that Mr. Burke invariably did what was best under existing circumstances, and that he never neglected any precaution which could tend in any way to bring his undertaking to a successful issue. But we must remember that Mr. Jackson comes forward as the avowed advocate of Mr. Burke; and, while we are not one whit behind him in enthusiastic admiration for the energy and self-devotion displayed by his hero, we must not allow

our respect for these qualities to blind us to any defects which we think we can detect in the conduct of the expedition. The report of the Commission, appointed by the Victorian Government to inquire into the circumstances connected with the death of Burke and Wills, finds fault with Burke on several points, which we will proceed to consider in detail. In the first place, it pronounces that Burke acted 'most injudiciously' in dividing his party at Menindie. We are not sure that we can entirely concur in this verdict. We do not see any evidence that Burke intended the dépôt at Menindie to be a permanent one. On the contrary, it seems clear that he intended it to have been transferred bodily to Cooper's Creek. On his arrival at Menindie, Dr. Beckler's refusal to proceed further placed him in an awkward position. As Beckler had no objection to remain at Menindie, Burke resolved to make his services available as far as possible, and left him there with a section of the party in charge of the heavier stores, while he himself pushed on towards Cooper's Creek under the guidance of Mr. Wright. The division of the party did not in any way retard or imperil Burke's arrival at Cooper's Creek; and he seems to have looked forward to the union of all his forces at that place before he proceeded further. As soon as he was convinced that Wright was worthy of confidence, he appointed him third officer of the expedition, and sent him back to bring the remainder of the party to Cooper's Creek without delay, at the same time accepting Beckler's resignation, and relieving him from any further charge. We cannot therefore see that the division of the party at Menindie was directly productive of any evil consequences, nor would any harm have resulted from it, but for Wright's flagrant neglect of the instructions of his chief. In the next place, the report pronounces that 'it was an error of judgment on the part of Mr. Burke to appoint Mr. Wright to an important command in the expedition, without a previous personal knowledge of him.' On this point we think there is good ground for the censure of the Commission. That Burke was, as it were, driven into a corner by the resignation of Landells and Beckler is quite true; but it is difficult to imagine that he should not have been able (supposing him to possess any insight into character at all) to detect, during the time that he and Wright were together, some indication of the gross incompetence which the latter subsequently displayed. Mr. Jackson endeavours to shift the

blame from Mr. Burke's shoulders to those of the Exploration Committee, by observing that the Committee knew of Wright's appointment by Dec. 3, and so had plenty of time, if they had had any objection to him, to replace him by some one else. What objection could the Committee possibly have to a man whose name they had never heard before that moment? Clearly they are not to blame for relying upon the judgment of the leader whom they had selected, and confirming his appointment of a man who he assured them 'was well qualified for the post, and bore the very highest character.' Whatever blame may attach to the selection of Mr. Wright for a post of trust must rest entirely upon Mr. Burke. The Commissioners next proceed to blame Mr. Burke for finally departing from Cooper's Creek before the arrival of the dépôt party from Menindie, and for undertaking so extended a journey with an insufficient supply of provisions. On both these points there is something to be said in Mr. Burke's favour. As regards the first, his conduct was the natural result of his misplaced confidence in Wright, combined with the consideration that the success of his journey depended in great measure upon the rapidity with which it was prosecuted. With respect to the second, we must remember that on an expedition of this kind, when the carrying power is limited, and every ounce of weight has to be considered, it is almost as important to exclude everything that is superfluous as it is to leave behind nothing that is strictly necessary. It seems probable, however, that Mr. Burke was guilty of an error in judgment, in underrating the time which the journey from Cooper's Creek to Carpentaria was likely to require. Finally, the Commissioners draw attention to the fact that it does not appear that Burke kept any regular journal, or that he gave written instructions to his officers. 'Had he,' they observe on this point—and we fully concur in their remark—'performed these essential portions of the duties of a leader, many of the calamities of the expedition might have been averted, and little or no room would have been left for doubt in judging of the conduct of those subordinates, who pleaded unsatisfactory and contradictory verbal orders and statements.'

"We are unable, the reader will perceive, to concur in Mr. Jackson's repeatedly expressed opinion, that there are no grounds whatever for any of the censures which the Commissioners found it their duty to

pronounce on some points connected with Mr. Burke's management of the expedition. The fact is, that after a careful consideration of all the circumstances of the case, we incline to the conclusion that Mr. Burke did not possess the qualifications necessary for the successful leadership of such an enterprise; and that, consequently, some blame must rest with the Exploration Committee, who selected a comparatively unfit person for a position of such responsibility and importance. We appreciate and admire, as enthusiastically as Mr. Jackson himself can possibly do, the courage and self-devotion displayed by Mr. Burke; but we cannot forget that gallantry and daring are not the only qualities required in the leader of an exploring expedition through an unknown and difficult country. The choice of the Committee was, we believe, mainly dictated by the consideration that Mr. Burke had, while employed in the police-force of the colony, shown himself to be possessed of a considerable talent for organization, and of no little aptitude for command. They appear not to have attached sufficient importance to the not less material fact, that he knew nothing of bush-travelling, and had no practical experience of the preparations and precautions necessary for the successful prosecution of such a journey as that with which he was entrusted. Mr. Jackson calls upon us to observe that it was to the *rapidity* of Mr. Burke's progress that his ultimate success is due; and the observation is, to a great extent, justified by facts. It appears to us, however, that most, if not all, of the errors of judgment of which he was guilty, during the progress of the expedition, are directly traceable to the same quality of mind which rendered him so prompt in action. The Commissioners hit the blot in his character when they pronounced that 'his zeal was greater than his prudence.' The examination of his proceedings which we have already made affords, we think, ample grounds for this conclusion. We have, however, met with one passage in the records of the expedition which exhibits Mr. Burke's constitutional hastiness of temper and want of judgment in so strong a light, that we cannot refrain from placing it before the reader. It occurs in King's narrative of the attempt made by himself, Burke, and Wills, to reach the settled districts of South Australia, after they had found the dépôt at Cooper's Creek deserted. Mr. Wills had gone back to the dépôt, and Burke and King were awaiting his return. King proceeds as follows:—

"'A few days after Mr. Wills left, some natives came down to the creek to fish at some water-holes near our camp. They were civil to us at first, and offered us some fish; on the second day they came again to fish, and Mr. Burke took down two bags, which they filled for him; on the third day they gave us one bag of fish, and afterwards all came to our camp. We used to keep our ammunition and other articles in one gunyah, and all three of us lived together in another. One of the natives took an oil-cloth out of this gunyah; and Mr. Burke, seeing him run away with it, followed him with his revolver, and fired over his head, and upon this the native dropped the oil-cloth. While he was away, the other blacks invited me away to a water-hole to eat fish, but I declined to do so, as Mr. Burke was away, and a number of natives were about who would have taken all our things. When I refused, one took his boomerang and laid it over my shoulder, and then told me by signs that if I called out for Mr. Burke, as I was doing, that he would strike me. Upon this, I got them all in front of the gunyah, and fired a revolver over their heads; but they did not seem at all afraid, until I got out the gun, when they all ran away. Mr. Burke, hearing the report, came back, and we saw no more of them until late that night, when they came with some cooked fish, and called out, "White fellow." Mr. Burke then went out with his revolver, and found a whole tribe coming down, all painted, and with fish in small nets carried by two men. Mr. Burke went to meet them, and they wished to surround him; but he knocked as many of the nets' of fish out of their hands as he could, and shouted out to me to fire. I did so, and they ran off. We collected about five small nets of cooked fish. The reason he would not accept the fish from them was, that he was afraid of being too friendly, lest they should be always at our camp. We then lived on fish until Mr. Wills returned.'

"This method of dealing with the natives was surely, to say the least of it, exceedingly injudicious. They had, it appears, always shown themselves friendly to the explorers; and, in the weak state of the party, it was little short of madness to run the risk of disturbing the friendly relations between them and the blacks by any act of violence. And yet we find Mr. Burke actually attacking them, and taking forcibly from them the food which they had always shown themselves ready to give;

and for no better reason than that 'he was afraid of their being too friendly, lest they should be always at the camp.' Not many days later Mr. Burke died while making a last attempt to rejoin those very natives whom he had driven away. It is scarcely possible to avoid the conclusion that Mr. Burke's judgment must have been materially weakened by the sufferings and privations he had undergone, before he could possibly have acted in so utterly unaccountable a manner.

"We must now say a few words as to the route taken by Mr. Burke on his journey from Cooper's Creek to Carpentaria, and the nature of the country through which he passed. His first idea after reaching the Creek was to proceed due north, and four tentative expeditions were made in that direction, one of which was pushed to a distance of ninety miles. Finding, however, that the ground was too rough, either for horses or camels, he finally resolved to proceed in a north-westerly direction as far as Eyre's Creek, and at that point turned northward, and crossed the continent by a route which lies mainly on or about the 140th meridian of east longitude. The country does not appear to be difficult to traverse; and Mr. Wills tells us that the worst travelling-ground they met with was between Bullo and Cooper's Creek. As regards the nature of the land, Mr. Burke briefly sums it up in the following words: 'There is some good country between this (Cooper's Creek) and the Stony Desert. From thence to the tropics the country is dry and stony. Between the tropics and Carpentaria a considerable portion is rangy, but is well watered and richly grassed.' Mr. Wills reports that 'as to pasture, it is only the actually stony ground that is bare, and many a sheep-run is, in fact, worse grazing than that.' As regards the supply of water, it appears that the expedition, except when actually crossing the desert, never passed a day in which they did not traverse the banks of, or cross, a creek or other water-course. The whole country appears, in short, to be admirably adapted for pastoral purposes, and its discovery cannot but add largely to the resources of the Australian colonies. Sir Henry Barkly, the Governor of Victoria, in a despatch to the Duke of Newcastle, states that the occupation of "Burke's Land" with stock is already seriously contemplated by the squatters, and that there seems little reason to doubt that in the course of a few years the journey from Melbourne to Carpentaria will be performed with compara-

tive facility by passing from station to station. He adds that much of the country traversed by the expedition between the Darling and Cooper's Creek is already taken up, so that both sheep and cattle are now depastured within 25 miles of Bullo, stretching thence easterly along the Queensland boundary in an almost unbroken chain. These anticipations are fully confirmed by the report of Mr. Landsborough, the Queensland explorer. This gentleman, who has crossed the continent from Carpentaria to Melbourne, gives the most favourable account of the pastoral capabilities of the country which he traversed, and does not hesitate to express an opinion that within twelve months the whole of it will be taken up by settlers. We need not therefore hesitate to conclude, with Sir Henry Barkly, that 'the results attained by the expedition are of the very highest importance, both to geographical science and to the progress of civilization in Australia.' "

APPENDIX II. (p. 131.)

The following pathetic address, recently transmitted by H. E. Sir George Grey to the Duke of Newcastle, H. M. Secretary of State for the Colonies, for presentation to Her Majesty under her recent bereavement, also attests the deeply poetic vein that marks the Maori character.

Oh Victoria, our Mother!—We greet you! You, who are all that now remains to recall to our recollection Albert, the Prince Consort, who can never again be gazed upon by the people.

We, your Maori children, are now sighing in sorrow together with you, even with a sorrow like to yours. All we can now do is to weep together with you. Oh, our good mother, who hast nourished us, your ignorant children of this island, even to this day!

We have just heard the crash of the huge-headed forest tree which has untimely fallen, ere it had attained its full growth of greatness.

Oh, good lady, pray look with favour on our love. Although we may have been perverse children, we have ever loved you.

This is our lament.

Great is the pain which preys on me for the loss of my beloved.

Ah, you will now lie buried among the other departed kings.

They will leave you with the other departed heroes of the land.

With the dead of the tribes of the multitude of 'Ti Mani.

Go fearless then, O Pango, my beloved, in the path of death; for no evil slanders can follow you.

Oh my very heart! Thou didst shelter me from the sorrows and ills of life.

Oh my pet bird, whose sweet voice welcomed my glad guests!

Oh my noble pet bird, caught in the forests of Rapaura!

Let, then, the body of my beloved be covered with royal purple robes!

Let it be covered with all-rare robes!

The great Rewa, my beloved, shall himself bind these round thee.

And my ear-ring of precious jasper shall be hung in thy ear.

For, oh! my most precious jewel, thou art now lost to me.

Yes, thou, the pillar that didst support my palace, hast been borne to the skies.

Oh, my beloved! you used to stand in the very prow of the war-canoe, inciting all others to noble deeds. Yes, in thy life-time thou wast great.

And now thou hast departed to the place where even all the mighty must at last go.

Where, O physicians, was the power of your remedies?

What, O priests, availed your prayers!

For I have lost my love; no more can he re-visit this world.

APPENDIX III. (p. 172.)

COPY OF OFFICIAL LETTERS OF H. E. COL. SIR T. GORE BROWN, GOVERNOR OF NEW ZEALAND TO COMMODORE VON WULLERSTORF-URBAIR, COMMANDER OF THE NOVARA EXPEDITION.

I.

Government House, Auckland, New Zealand, January 4th, 1859.

Sir,

I do myself the honour to express to you the gratification which the visit of His Imperial Majesty's frigate *Novara* has afforded to the inhabitants of Auckland and to myself.

I beg also to convey to you and to the officers of the scientific department of your Expedition my best thanks for the valuable information supplied by the investigations of these gentlemen.

It will be my agreeable duty to report to her Majesty's Government on the subject, and I am satisfied that her Majesty will receive the communication with pleasure, and will recognize the importance of the services rendered to one of her Dependencies.

Wishing you a prosperous voyage, and success in the interesting objects of your pursuit, I beg to subscribe myself,

Your faithful servant,

THOMAS GORE BROWN, Col. H. M. S.,
Governor of New Zealand.

II.

Government House, Auckland, New Zealand, January 5th, 1859.

Sir,

Having already endeavoured to express my thanks to yourself and the officers of the scientific department of your Expedition for the valuable aid afforded to the Colony, I now venture to ask you to confer a still greater favour, by giving permission to Dr. Hochstetter to extend his researches for a few months longer.

In the event of your granting this permission, the means necessary to

enable him to explore effectually will be provided at the expense of the Colony of New Zealand.

I feel less diffidence in making this request to you, as Representative of the Imperial Government, because Dr. Hochstetter's labours in this Colony may be made the means of furthering the objects, which his Imperial Majesty the Emperor of Austria had in view, when he despatched the Expedition under your command.

I beg to add, that, should you feel it compatible with your duty to accede to the application I have now the honour to make, every assistance shall be afforded to Dr. Hochstetter, whilst engaged in this Colony, to enable him to make his scientific researches as valuable as possible to the Expedition of which he will remain a member, and care shall be taken to facilitate his return to Europe at the expense of this Colony by such route as he shall prefer.

I have the honour to be, Sir,
Your most faithful servant,
Thomas Gore Brown, Col. H. M. S.,
Governor of New Zealand.

APPENDIX IV. (p. 172.)

REPLY OF COMMODORE B. V. WULLERSTORF-URBAIR.

On Board H. I. R. M. Frigate Novara, Auckland Harbour, January 5th, 1859.

Sir,

In reply to your official note, dated Government House, Auckland, January 5th, a. c. in which, as the Representative of the Imperial Government, you prefer the request, that I would give Dr. Hochstetter permission to extend his geological researches in this Colony for a few months longer, I am most happy to accede to your application, and to give Dr. Hochstetter, in his capacity as geologist of the Imperial Expedition, leave for that purpose, under the following conditions, which are nearly the same as those stated in your kind note :—

1. That Dr. Hochstetter's sojourn in New Zealand may not exceed six months, and thus enable him to return to Europe nearly at the same period as the I. R. frigate is most likely to arrive there, namely, in November or December next.

2. That the *Novara* Expedition, of which Dr. Hochstetter still remains a member, may likewise enjoy the benefit of the observations, collections, and publications made by Dr. Hochstetter during his stay in New Zealand.

3. That the means necessary to enable Dr. Hochstetter to explore the country effectually shall be provided at the expense of the Government of New Zealand; that every assistance shall be afforded to this gentleman whilst engaged in these geological explorations, and that care shall be taken to facilitate his return to Europe (viz. Trieste), at the expense of the Government of New Zealand, by such route as he shall prefer.

Upon this understanding I shall not only consider it compatible with my duty to accede to your Excellency's application, and give Dr. Hochstetter permission to remain for the time stated in the Province of Auckland, but shall also feel quite certain, that the Imperial Austrian Government, as well as the Academy of Sciences whose delegate Dr. Hochstetter must be considered, will be highly gratified to learn that it was in the power of the first Austrian Exploring Expedition to become serviceable to a nation which has done so much for the advancement of science and the development of natural resources in almost all parts of the world.

With hope that the friendly arrangement thus entered into on this subject may create a lasting bond of union and communications between the scientific men of both countries,

I have the honour to subscribe,

Your faithful servant,

B. V. Wullerstorf.

APPENDIX V. (p. 188.)

ADDRESS OF THE INHABITANTS OF THE PROVINCE OF AUCKLAND, NEW ZEALAND, TO THE GEOLOGIST OF THE NOVARA.

Dr. Hochstetter,

On the conclusion of your Geological Examination of a large and most interesting portion of this province of New Zealand, we—the assembled inhabitants of Auckland, representing every section of the community, and for the most part intimately connected with the Agriculture and Commerce of the province—desire to express our admiration of the eminently scientific manner and unwearied activity with which you have conducted your researches into the Geological Formations and Mineral Resources of Auckland. We have also to thank you for the valuable information upon these objects, which you have already placed in our possession in the public lecture delivered by you in this hall on the 24th of June, and in the reports you have forwarded to the General and Provincial Governments.

The report of a member of the *Novara* Expedition, on the physical characteristics of this portion of New Zealand—of which so little has hitherto been known—will be acknowledged in Europe as both impartial and authentic.

To us, as a community, the information contained in that report and the maps you have constructed, together with those additional details we hope to receive from you after your return to Europe, will be of essential service in a material point of view. We also desire to convey to you our sense of the impartiality of your reports, which, whilst they lay open to our view those resources of the country that will eventually aid to its wealth and its general prosperity, in no way exaggerate their value or tend to lead to extravagant ideas or speculations that might only result in disappointment.

Arriving in Auckland a stranger, upon whose sympathies we had no claim, you have exerted all your energies to condense the results of your scientific exploration into practical forms, for the benefit of the people

of the foreign country you visited for purely scientific purposes, or for the special advantage of your own country.

On all these accounts we feel that our warmest thanks are due to you for your disinterested exertions for the promotion of our welfare. As an enduring testimony thereof, we request the acceptance of this purse, the contents of which we beg you will devote to the purchase of some piece of plate that we trust may be regarded by your family and your countrymen, not only as a tribute of respect to your varied talents, but as a well-merited memento of the grateful acknowledgment by the people of the province of Auckland of the eminent scientific and practical services rendered to them by you.

We are desirous that the plate should bear the following inscription :

"Presented to Dr. Hochstetter, Geologist attached to the Imperial Royal Austrian Scientific Expedition in the frigate *Novara*, by the inhabitants of the Province of Auckland, New Zealand, in testimony of the eminent services rendered to them by his researches into the Mineral and Agricultural resources of the Province."

Signed on behalf of the subscribers,

R. Mould,
Colonel, commanding Royal Engineers,
Chairman of Committee.

John Williamson,
Superintendent,
Province of Auckland.

Auckland, 24th July, 1857.

APPENDIX VI. (p. 193.)

ADDRESS OF THE INHABITANTS OF THE CITY AND PROVINCE OF NELSON TO THE GEOLOGIST OF THE NOVARA.

Dr. Hochstetter,

Before your departure from among us, we, the inhabitants of the Province and City of Nelson, beg to express to you our great obligations for the benefits which you have conferred upon us as a community.

Though we cannot but congratulate you upon your approaching return to your country and your family, we have strong personal reasons

for looking upon it with regret. We feel that it has been no light or trifling advantage to have had among us one of that small class of men who conduct the great national expeditions by which the benefits of science are distributed over the world.

We know that such an one comes invested with the highest possible authority to speak decidedly on the subjects of his investigations, and are sure that we may place the most implicit confidence in his statements. It is the great characteristic of such scientific pursuits as you are engaged in, that though on the one hand they are joined to the deepest and inmost principles of nature, on the other they are linked to the daily wants and commonest necessities of life. We believe therefore that your visit here will not be barren of practical results. We believe that it will give us both a desire to develope, as far as possible, our share of the gifts of nature, and a knowledge how we may best do this.

We know that we have had no special claims on you for the interest you have taken in our welfare. The advantages which we have derived from it are, however, of such a kind that both those who give and those who receive may be proud of. We have had many opportunities of noticing how earnestly you pursue knowledge for its own sake, and are glad to find that those who do so are the most ready to employ for the benefit of others what they have acquired themselves. You have done this in our case with considerable personal exertion and discomfort, which have been cheerfully encountered by your diligence and activity.

We do not wish to do more than allude to considerations of a personal kind. But we must express our appreciation of your courteous and kind behaviour towards us, and assure you that few men could have been among us for so short a time and have acquired so much of the character of a personal friend.

We beg your acceptance of the accompanying Testimonial, the product of our Gold-fields, and we ask you to apply it to the purchase of a piece of plate, which may help to keep us in your remembrance, and on which we ask you to place the following inscription :—

"Presented to Dr. Ferdinand Hochstetter, Geologist to the Imperial Royal Austrian Scientific Expedition in the frigate *Novara*, by the inhabitants of the Province of Nelson, New Zealand, as a record of their appreciation of the great benefits conferred upon them and the Colony

by his frank communication of the results of his zealous and able researches into the geological character and mineral resources of the Province."

We earnestly hope that all good may go with you on your return to Europe, and that after a pleasant and speedy voyage you may reach in safety your home and friends. And with this wish we bid you heartily "Farewell."

Signed on behalf of the inhabitants of Nelson :

J. P. Robinson,
Superintendent of the Province of Nelson,
New Zealand.

APPENDIX VII.

New Granada has now taken the title of the United States of Colombia, as appears from the following document translated from the Spanish circular to the Diplomatic Officials and Consuls of the United States of Colombia.

Secretary of State and Foreign Affairs.

Sir,—

In order that you may be exactly acquainted with the situation of the country, the undersigned, Secretary of State, proposes to inform you every fortnight of the progress of the nation, setting forth fully and frankly all that has been done, neither misrepresenting nor omitting anything which, whether favourable or adverse to the new order of things in Colombia, may be worthy of your notice.

You are not ignorant that since July 18, 1861, when the Federal Government came into power in Bogota, the States of Cauca, Antioquia, Santander, and Tolima have continued in the hands of the Centralists. You are not ignorant that the decrees of "Tincion and Desamortizacion" of effects in mortmain, put forth during the days which followed the 18th of July, provoked the most violent discontent on the part of the ultramontane clergy ; and that these clergy, exchanging piety for gain,

and setting aside all the Christian precepts of charity, renunciation of worldly goods, moderation, and submission to the powers that be, placed themselves in open rebellion, and endeavoured by every possible means to subvert the peace. Thus Romanism succeeded in raising in Santander an army of 3000 men, in Tolima another of 1000, and in Boyacá and Cundinamarca several armed companies, one of which (that of Guasca) numbered upwards of 1000 soldiers. The Government did not, nevertheless, concern itself much about this, because on its side were reason, opinion, and strength. Now, I am glad to tell you, that out of the nine States of the Colombian Union, seven enjoy an order and tranquillity as absolute as unchangeable. The heroic State of Santander, so maltreated by the Centralists during four years, does not contain on its soil one armed enemy, and its Government, diligent and efficient in peace as in war, is directing its attention to the re-establishment of commerce and the good exercise of its administration. The faction of Tolima, after having committed incalculable depredations and excesses, has been completely subdued. The parties fomented in Boyacá and Cundinamarca have been broken up; the only one which has hitherto been able to maintain a footing, although considerably diminished, that of Guasca, has been overcome during the last few days, its chief having been killed in battle. The only disturbed States are therefore now those of Cauca and Antioquia. Thus, then, considering that the seven States in which order and peace reign, Panama, Bolivar, Magdalena, Santander, Boyacá, Cundinamarca, and Tolima, are on the coast, in the north and centre; that is to say, the most important ones in a commercial, financial, and military point of view, because in them are principally found the ports through which our foreign commerce is carried on, the rich custom-houses, the salt mines, the navigable rivers, the most valuable riches, the most abundant agricultural produce, the sources of our exports, the great mass of the population, and the greatest amount of the national strength; it may very reasonably be concluded that Colombian order rests upon firm bases,—and considering, further, that in the two States still unquiet, the disturbers are reduced to very narrow limits, having no port through which to introduce the elements of war, no funds at their disposal to increase or maintain their present force;—that public opinion is generally against them, seeking all means

of showing them hostility, of diminishing their army, and of closing to them all resources;—that they are closely threatened by a numerous, trained, enthusiastic army, in perfect discipline, and well supplied with provisions and ammunition;—that this army, part of which occupies the south of the valley of Cauca, another part the Andes of Quindio, and the other preparing at Mompos to penetrate, if necessary, into Antioquia, commanded by experienced generals, under the immediate direction of the President of the Union;—and lastly, that the insurgent troops will amount at most but to a third part of those sent against them by the Government; that they are in want both of provisions and arms, as also of able generals:—when all this is considered, I say, it must be concluded that ere long peace will be re-established in these two States as it has already been in the rest of Colombia. It is not without regret that the President is about to undertake military operations against the two disturbed States, for his most earnest desire has been to establish tranquillity by means of conciliation, without fighting. The conduct observed by him since the commencement of the civil war has been in keeping with this desire. Only to mention recent events, hardly was Bogota occupied in 1861, ere he addressed himself with this object in the most conciliating terms to the Governments of the insurgent States. That of Antioquia had not even the courtesy to answer him. A new and even more advantageous offer of peace, on the occasion of convoking the National Convention, has been made, proving the patriotic feeling of the President and the obduracy of the Centralists ruling in Antioquia. And it must be remembered that the leniency of the Government of the Union is so much the more praiseworthy, as it has been the Government of Antioquia which has brought upon Cauca the calamity which has now prostrated it. In fact, peace and law would have obtained there many months ago, but for a cruel faction supported and reinforced by the Antioquian Government, who renewed it when it was failing, supplied it with money and munitions, assisted it with military forces, and maintained anarchy and, not alarm, but terror, in the State of Cauca. But notwithstanding these weighty motives for inducing the Government of the Union to send its army against the State of Antioquia, yet with great magnanimity it has declared that it will only do so in the event of the Government of An-

tioquia not having agreed to submit to the Union by the 6th of August next, the day on which the national convention is to assemble at Cartajena. It is not indeed possible that this State should be allowed to remain separate from the Union, against the will of the Antioquian people, who do not join in the views of those now ruling them, nor is it to be endured that they should carry on against the other States and the Government of the Union a useless war, for no defined political object. The States that have not yet chosen their deputies for the Convention are now engaged in electing them. For the rest, although it may well be thought that after such a war as that through which we have passed the re-establishment of order and harmony in the different branches of public administration, as well in the States as in the Union, must be a long and anxious task, yet fortunately quite the contrary has taken place. Immediately after the battles in which the Federalists were successful society began to enjoy well-regulated civil and judicial administration, and consequently confidence, commerce, labour, social life, and striving for peace, were renewed with vigour. Our people is as much the friend of order and justice as of liberty and independence. To obey willingly it only desires from its governors honesty, activity, loyalty to institutions, patriotism, and respect for the ever moderate wishes of the country. The nation hates civil war, not alone from reason, but from instinct; it has not spontaneously sought the sad experience it has had of this terrible calamity; our strifes have not come from below; the incendiary torch fell from the seat of the chief Government. At least this is what has happened during the years just past. But this longing for durable peace, this dearly-bought experience, and this horror of civil war, joined to a moderate and firm love of liberty and a decided spirit of progress, will produce without doubt a constitution liberal, just, foreseeing, and clear, and for the future will excite the attention of the people to the election of their high officials. The President of the Union is in the country; his head-quarters are in no fixed place; until now he has been first in Piedras and then in Ambalema. A general secretary accompanies the President, for the despatch of administrative matters of a serious nature, or connected with the war, so that there may be no branch of government neglected, nor any subject of public interest which shall not be attended to as in ordinary times. This city, made

nearly a year ago into a Federal district, has a governor and a sufficient number of alcaldes and other subalterns to maintain order and police. Besides the army which is moving upon Antioquia and Cauca, there has been raised and organized another of reserve, as strong as the former, and divided into three parts, which garrison the States of Santander, Boyacá, and Cundinamarca. The national engagements in matters of credit have engaged the attention of the Government in the most especial manner. No outlay, not even to satisfy the necessities of existence, does it prefer to fulfilling its obligations with foreign creditors. Also are religiously cancelled the obligations in favour of foreigners given by the disloyal Government of the extinct Granadine Confederation, for the sums taken to make war upon the States which have supported Federal institutions. Property belonging to foreigners is more efficiently protected than it appears ever to have been before. In fact, all that has relation to the faithful observance of public treaties, to the persons, properties, and rights of citizens, or subjects of other nations, is a subject of special solicitude to the Colombian Government, it being well persuaded that the civilization as well as the good of the country demand a faithful fulfilment of its foreign engagements, in order to raise the national credit, and to aggrandize, by the increase of knowledge, of wealth, and population, the modest country in which our lot has been cast. To conclude, a solid and general peace is approaching with quick steps, and I believe that I shall be able to announce it to you definitely, together with the notice of the commencement of the operation of the national Convention, within two months. Some material improvements have been undertaken ; but the favourable moment of entire peace has not yet arrived to carry out all that the Government intends and desires to accomplish. In the " Rejistro Oficial " you will find all that has been done in these branches, and in favour of European immigration and the colonization of our waste lands.

MANUEL ANCISAR.

Bogota, June 5, 1862.

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viii. 3 from bottom, *for* minerals *read* mammalia
xxvi. 6 from bottom, *for* Saugar *read* Sangar
xxvii. 10 from bottom, *for* Tama *read* Jama
— 9 from bottom, *for* Saka *read* Saku
xxix. 12 from top, *for* sheet of water *read* pool of lava
xxx. 10 from bottom, *for* isolated Vaihu of the *read* isolated Vaihu *or* Easter Island
xxxi. 10 from bottom, *for* schists of lava *read* sheets *or* flows of lava
xxxv. 17 from top, *for* internally of a matted texture *read* within the holes of a melted glassy surface
— 2 from bottom, *for* Gacal *read* Jakal
xxxvi. last line, *for* Rosotlan *read* Bosotlan
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xxxviii. 9 from bottom, *for* Ausango *read* Ansango
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xxxix. 8 from bottom, *for* veins *read* grains
— 8 from bottom, *for* Weise *read* Wisse
— 6 from bottom, *for* trachytes of Hungary *read* trachytes out of Hungary
xlii. 5 from top, *for* 18° 15′ *read* 18° 25′
xliii. 12 from top, *for* Exogira contoni *read* Exogyra Conloni
xliv. 1 from top, or Yntales *has to be omitted entirely*
— 5 from top, *for* La Cruz *read* La Cruz Olmedella
l. 2 from top, *for* crooked *read* oblique
115 6 from bottom, *for* 30° 50′ *read* 33° 50′
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58	14	from top, *for* Cool-river *read* Cook-river
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—	5	from bottom, *for* this hitherto *read* a hitherto
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—	2	from bottom, *for* San Salvadore *read* San Salvador
420	9	from top, *for* Criomys *read* Eriomys
—	6	from bottom, *for* Chirār *read* Chirar
422	12	from top, *read* it rose from 65° to 76° Fahr.
—	11	from bottom, *for* Taboquille *read* Taboquilla
428	11	from top, *for* Le Breton *read* Lebreton
430	8	from top, *for* £200,000 to £1,300,000 *read* £200,000 to £300,000
—	9	from bottom, *for* an hour or two *read* a few hours
435	11	from bottom, *for* facts *read* specimens
444	5	from bottom, *for* however *read* moreover

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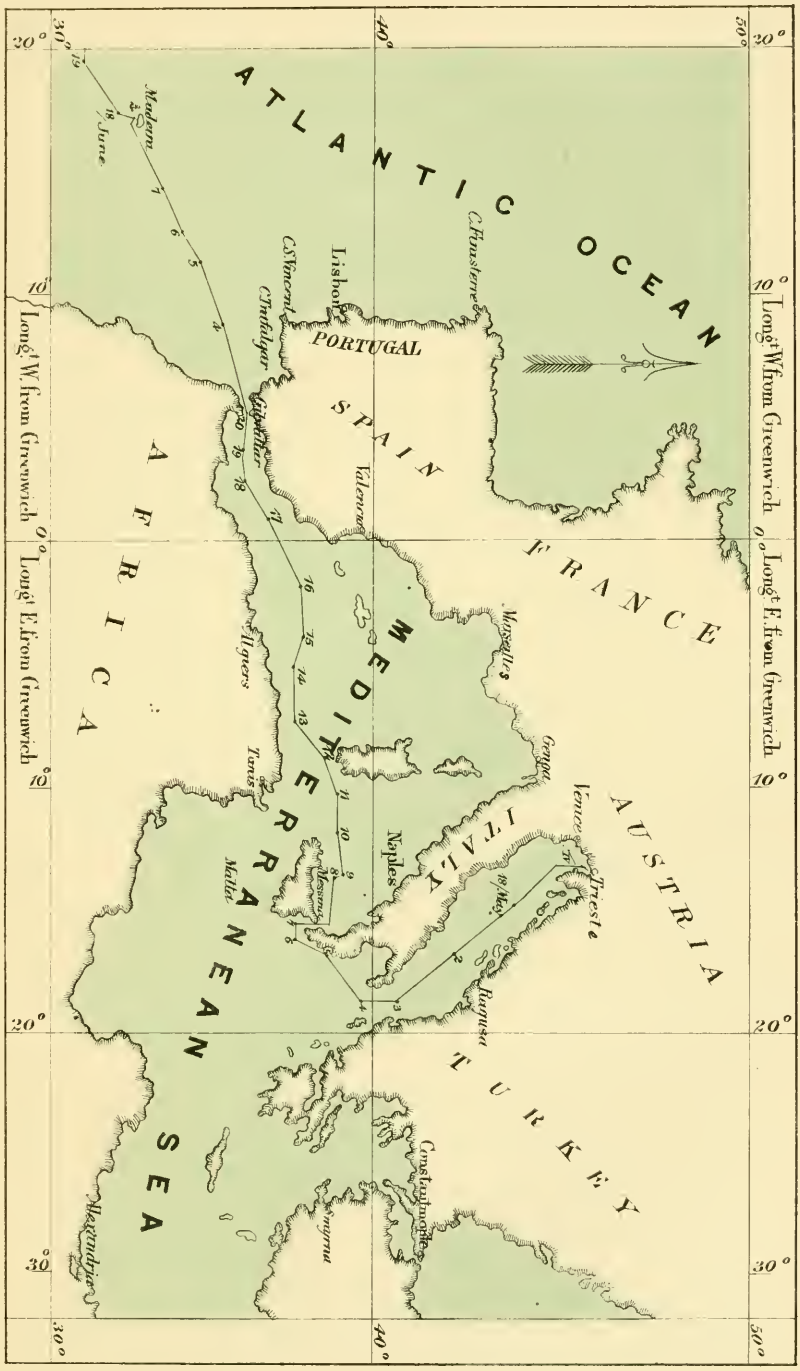

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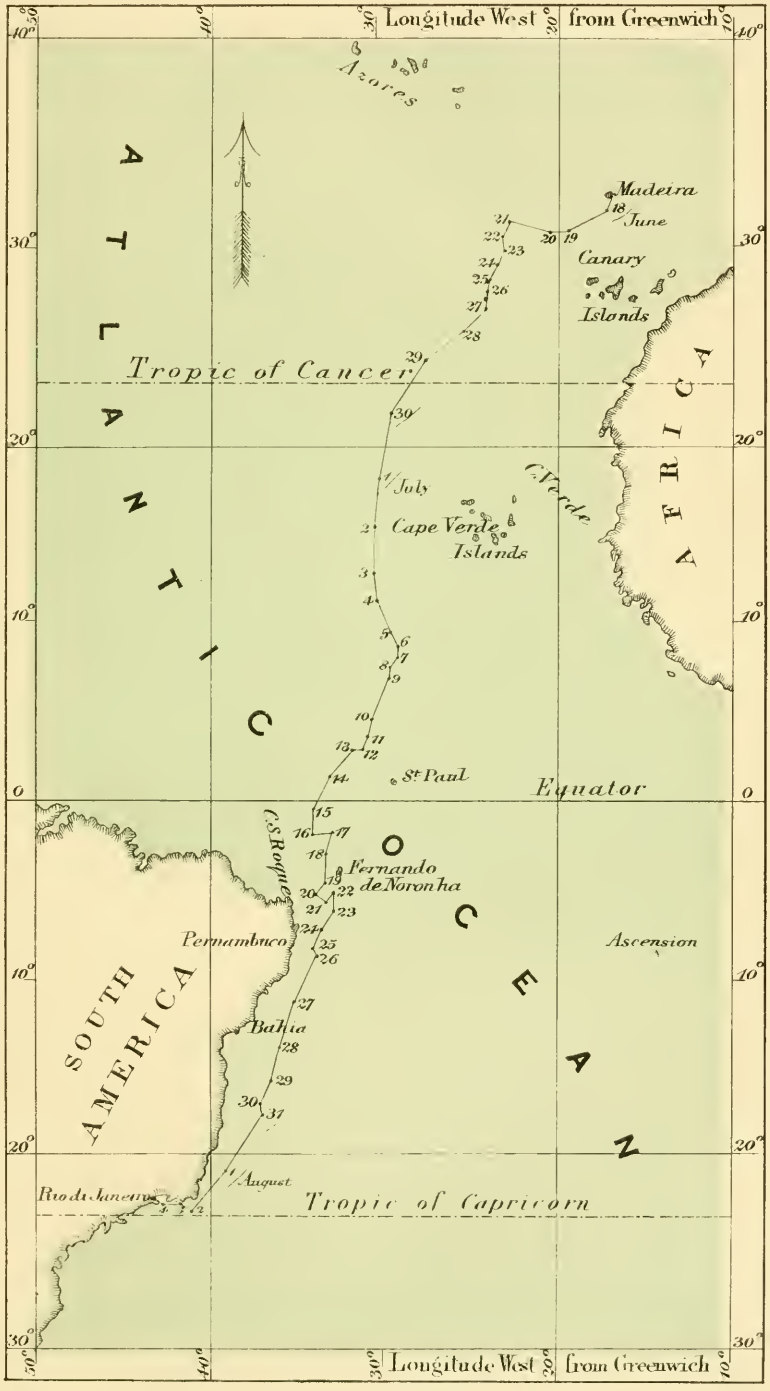

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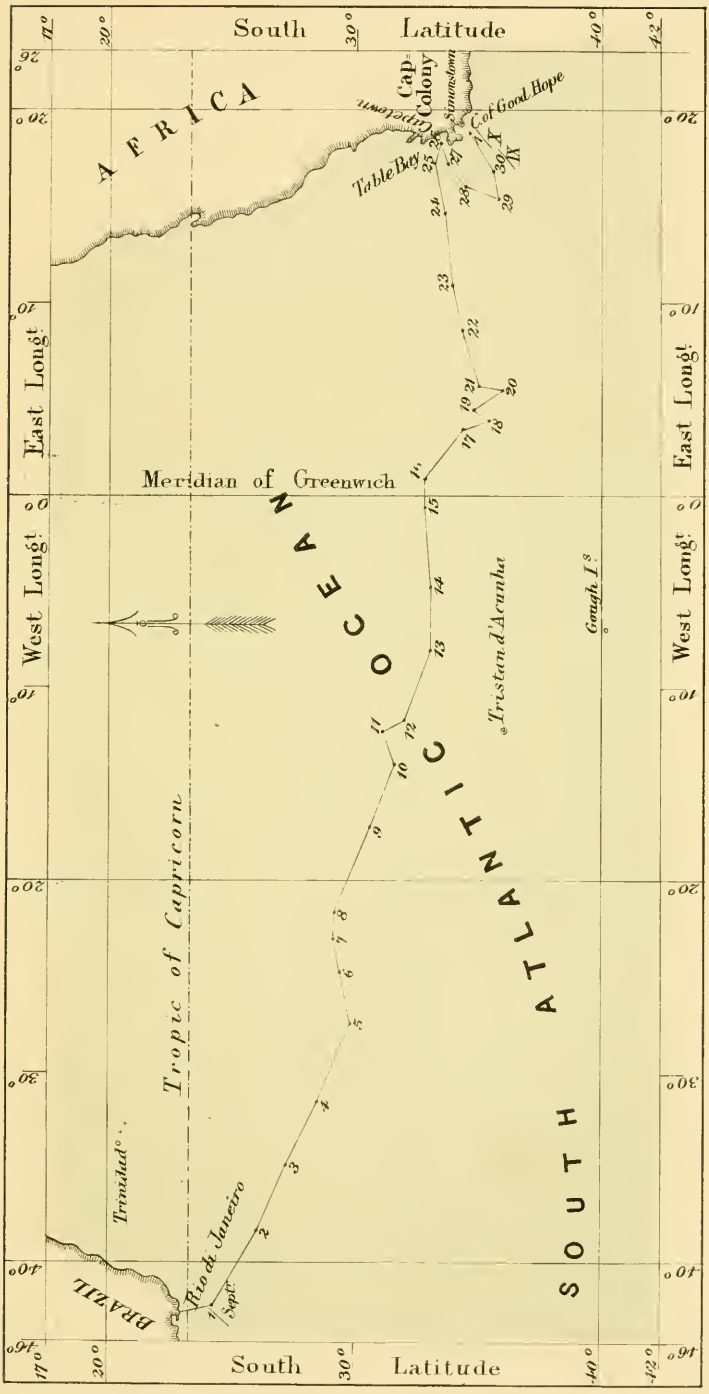

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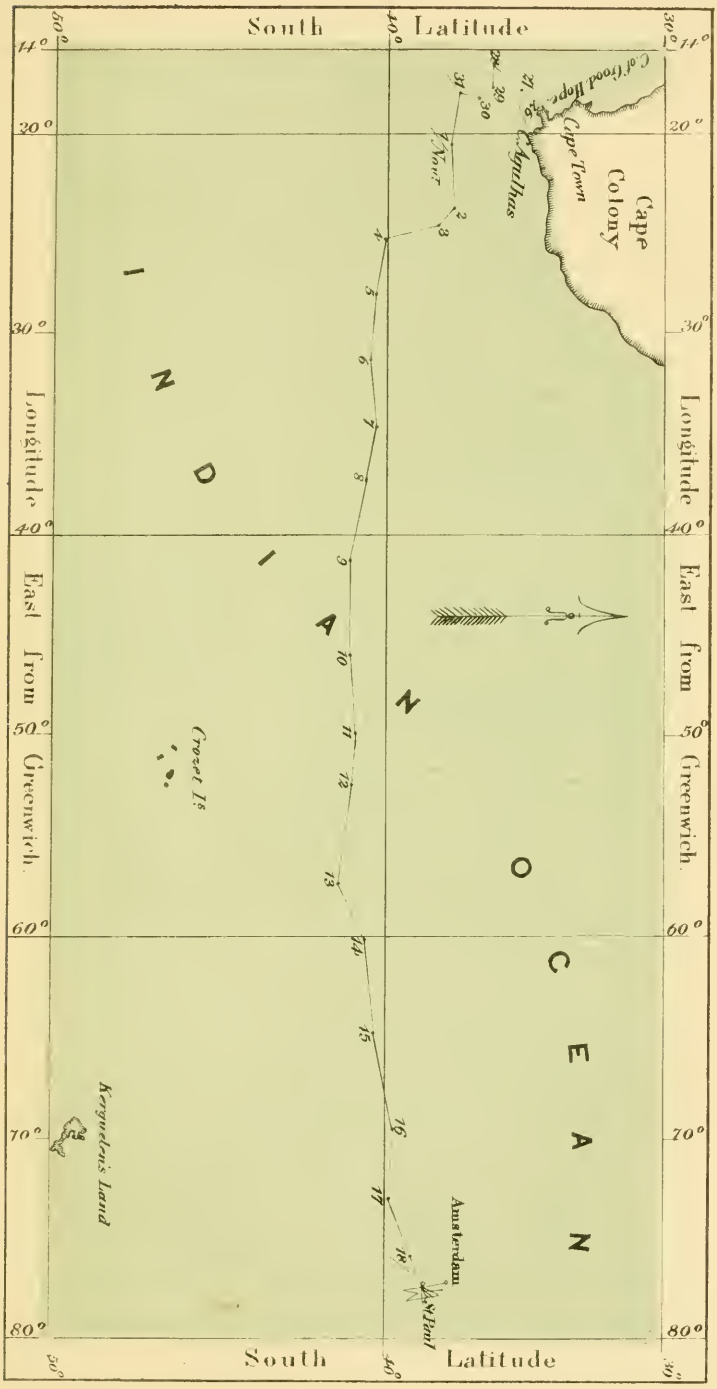

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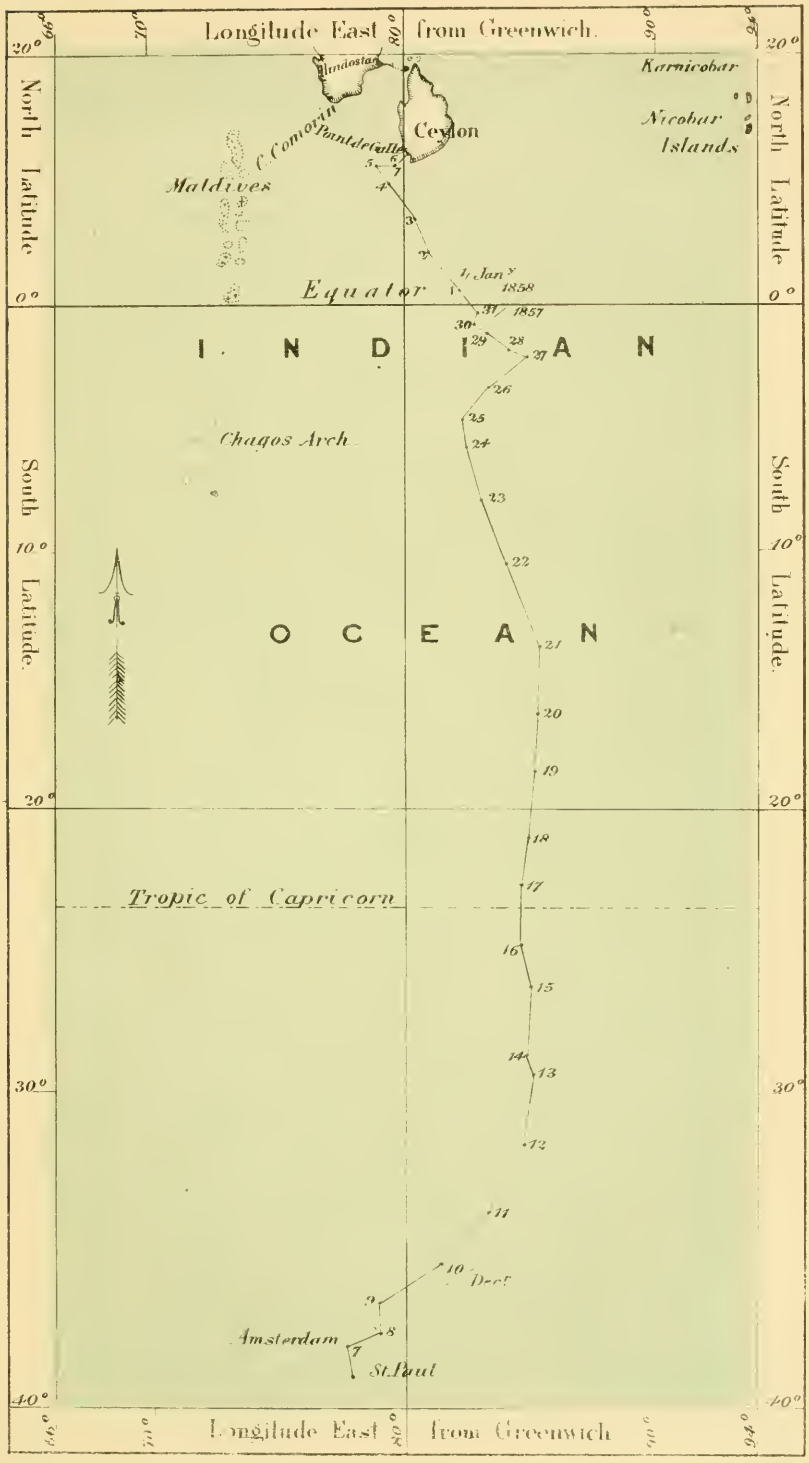

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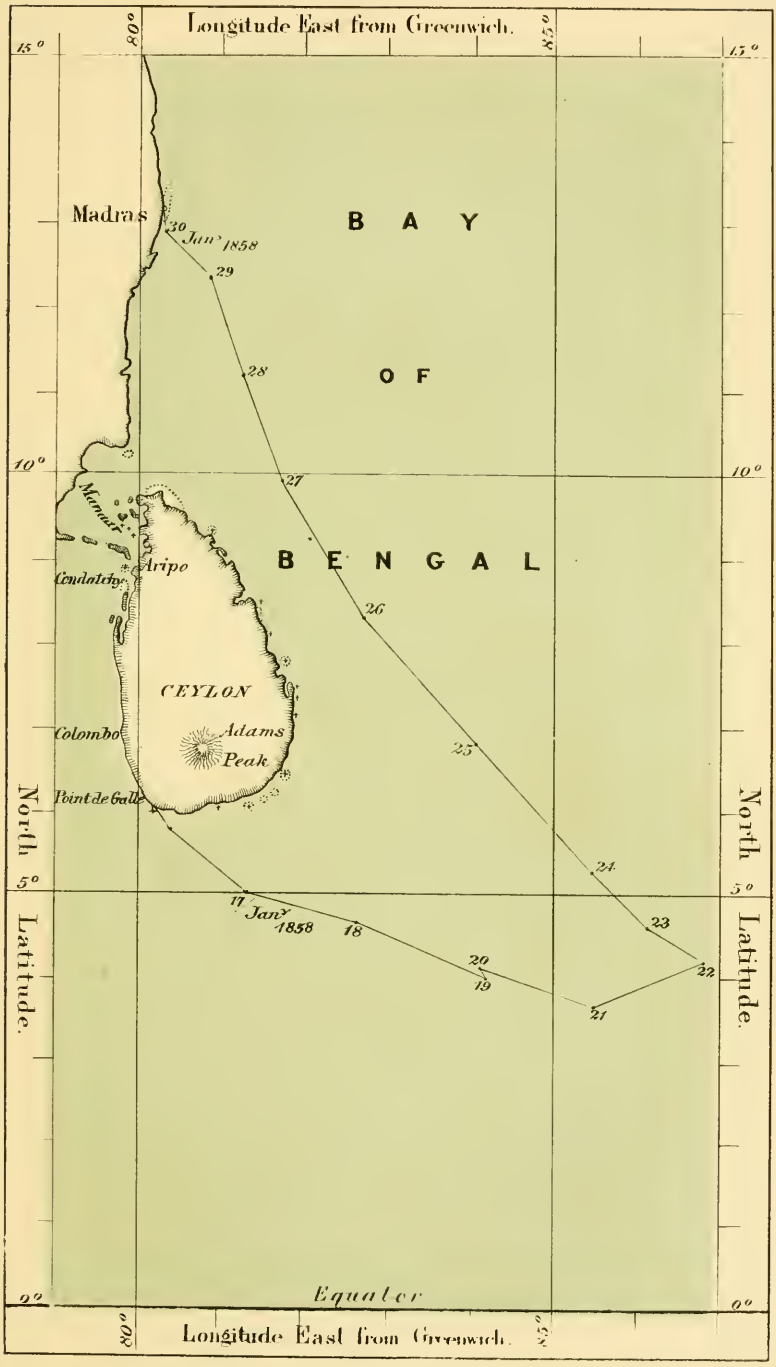

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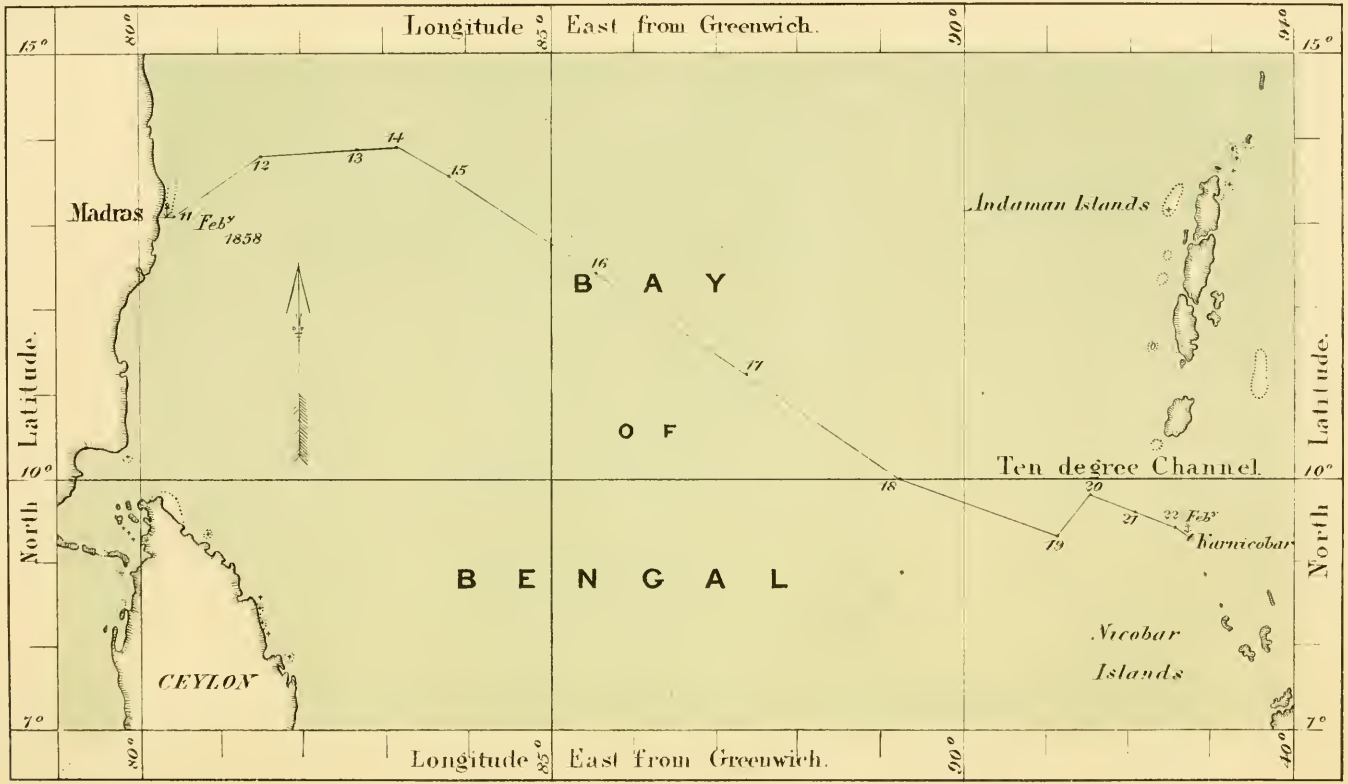

Longitude West from Greenwich
Longitude East from Greenwich
CHART
of the
TRACK OF THE AUSTRIAN IMPERIAL FRIGATE
NOVARA
on her
VOYAGE ROUND THE GLOBE
In the Years 1857, 1858, 1859
NORTH AMERICA
SOUTH AMERICA
EUROPE
ASIA
AFRICA
AUSTRALIA
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
EQUATOR
BLACK SEA
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Falkland Is.
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Tierra del Fuego
Cape Horn
Cape Colony
Sandwich Land
South Georgia
South Shetland
Tahiti
Easter Is.
Pitcairn Is.
Juan Fernandez Is.
Marquesas Is.
Canary Is.
Cape Verd Is.
Madeira
Azores
Iceland
Greenland
Spitzbergen
Nova Zembla
Kerguelens Land
Prince Edwards Is.
Crozets Is.
Amsterdam Is.
St Paul Is.
Mauritius
Madagascar
Maldive Archipelago
Laccadive Archipelago
Philippine Islands
Moluccas
Timor
Java
Sumatra
Nicobar Is.
Andaman Is.
Formosa
Loo Choo Is.
Japan
Kamtschatka
Behring Str.
Aleutian Is.
Sandwich Is.
Marquesas Is.
Society Is.
Low Archipelago
Friendly Is.
Tonga Is.
Cook Is.
Navigators Is.
Penrhyn Is.
Hervey Is.
Austral Is.
Pitcairn Is.
Gambier Is.
Mangarewa Is.
Disappointment Is.
Byron Is.
Duke of Gloucester Is.
Mitchell Is.
Dangerous Is.
Pilgrim Is.
Easter Is.
Juan Fernandez Is.
Amsterdam Is.
Falkland Is.
Clerke Is.
Sandwich Land
South Shetland
Longitude West from Greenwich
Longitude East from Greenwich